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THE ALPINE JOURNAL

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AND

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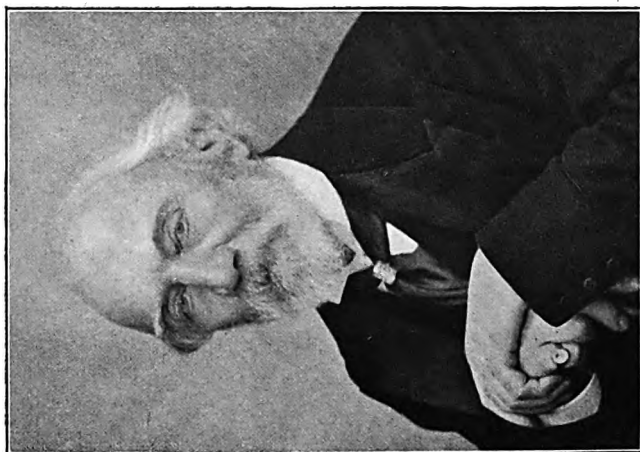
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Sir James H. Ramsay, Bt., of Bamff,
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(Oxford.)



Professor T. G. Bonney, Sc.D., F.R.S.
(at 82)
(Cambridge.)

TWO "EQUAL FATHERS" OF THE CLUB.
(Elected in 1859.)

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A HISTORY OF THE ALPINE CLUB.

By A. L. MUMM.

(Presented at the Congrès d'Alpinisme held at Monaco
in 1920.)

IN writing the history of a movement or an institution, it is sometimes not perfectly easy to know where to begin. Fortunately no difficulty of that nature exists in the case of the Alpine Club. In telling its story it is unnecessary to go back farther than the year 1850; with the exception of John Ball, none of those who played a prominent part in the early career of the Club had begun serious mountaineering before that date. A novel interest in the Alps had been created by J. D. Forbes's famous book 'Travels through the Alps,' and no account of British mountaineering would be complete without a reference to his exploits and their influence, but what made it possible for the impulse imparted by him to produce such far-reaching results was the rapid and extraordinary development of means of communication by railway between 1850 and 1856.¹

The railways spread a horde of peaceful invaders over

¹ Those who are curious in such matters can trace the process in the introductory portions of the 4th, 5th, 6th, and 7th editions of Murray's *Handbook for Travellers in Switzerland, Savoy, and Piedmont*, the earliest work on the Alpine regions produced by any member of the Club.

Europe, drawn from classes to whom Continental travel had hitherto been an impossibility; it was a considerable event in social history, and has left its mark in such books as 'The Kickleburys on the Rhine' and 'The Foreign Tour of Brown, Jones, and Robinson.'

In the narrower sphere of specifically Alpine literature this period also produced a small crop of books of travel of a new type, describing not mountaineering proper, but journeys through remote and unfrequented parts of the Alpine regions which for a few years still provided some flavour of adventure. Such were Charles Packe's 'Spirit of Travel,' William Longman's 'Journal of Six Weeks' Adventures,' the Rev. S. W. King's 'Italian Valleys of the Pennine Alps,' and Mrs. Cole's 'Lady's Tour of Monte Rosa,' dealing with tours ranging from 1850 to 1858, the first three written by future members of the Club, the last by the wife of a future member. To this class also belong Mrs. Henry Freshfield's two volumes, 'Alpine Byways' and 'A Summer Tour in the Grisons,' to which her son, Mr. Douglas Freshfield, contributed accounts of a passage of the Surenen Pass in 1859, and ascents of Monte Nero and the Fluela Schwarzhorn in 1861. I cannot refrain from digressing here for a moment to say that Mr. Freshfield has this year (1920), more than sixty years after his earliest essay, crowned his long series of contributions to Alpine literature by the completion of his 'Life of Horace Benedict de Saussure.'

The conditions favourable to the production of books of this character naturally did not last long, and in 1864 the series was brought to a worthy conclusion by Messrs. Gilbert and Churchill's classic work on 'The Dolomite Mountains.'

But we are getting on too fast and must return to two earlier works, Sir Alfred Wills's 'Wanderings in the High Alps' in 1852, 1853, and 1854, and T. W. Hinchliff's 'Summer Months in the Alps,' describing tours made in 1854, 1855, and 1856, which belong in part to the category just dealt with, but also contain accounts of several expeditions above the snowline, including some of the most arduous which had been accomplished up to that time. These narratives exercised a great influence on the budding climbers of that day; in particular Wills's chapter on his ascent of the Wetterhorn in September 1854 may fairly be described in this respect as epoch-making, and the expedition has ever since been reckoned as, in a sense, the starting-point of modern English mountaineering. No less stimulating was the slim volume in which Charles Hudson and E. S. Kennedy recounted the first ascent of the Aller

Höchste Spitze of Monte Rosa, and the first ascent of Mont Blanc from St. Gervais, both in 1855, the latter expedition being made without the assistance of professional guides.

In the meantime numerous young Englishmen were visiting the Alps. Mr. King, in the book mentioned above, speaks somewhat severely of 'young Cantabs and Oxonians scampering over pass after pass, with often apparently no other object than trying who can venture in the most novel break-neck situations, or arrive at the greatest height and back, or accomplish the furthest distance in the shortest time.'²

Nevertheless, they were good material, as time was to show, full of unorganised energy, which only needed a little direction. And among them there were some besides those already mentioned—not many, it would be difficult to name twenty, all told—who already realised that climbing did not begin and end with the ascent of Mont Blanc by the ordinary route from Chamonix. •

One of these was William Mathews, who in 1856 carried out an enterprising campaign among the mountains surrounding the Val de Bagnes, ground almost wholly untrodden and unknown, save to the great Swiss pioneers, Melchior Ulrich and Gottlieb Studer. Mathews' fame has been overshadowed by that of other men, and his career as a climber was cut short by ill-health, but at its close his knowledge of the Western Alps was probably unrivalled. He never published anything separately, but his contributions to 'Peaks, Passes, and Glaciers' exceed by far those of any other contributor and would make a good-sized volume. None of the younger men grasped so early and so clearly as he did all the possibilities offered by the Alps in the way of exploratory mountaineering, and it is to him that the first suggestion of the formation of an Alpine Club is due.

It was propounded in a letter written to the Rev. F. J. A. Hort in February 1857: the material portion, which has been several times reprinted, runs as follows:

'I want you to consider whether it would not be possible to establish an Alpine Club, the members of which might dine together once a year, say in London, and give each other what

² In the light of this observation it is amusing to study the earliest itineraries of such distinguished mountaineers as Packe, F. J. A. Hort, and F. F. Tuckett. They certainly seem framed with no other object than to cover the largest amount of ground possible in a given time.

information they could. Each member at the close of any Alpine tour in Switzerland or elsewhere should be required to furnish to the President a short account of all the undescribed expeditions he had made, with a view to the publication of an annual or biennial volume. We should thus get a great deal of useful information in a form available to the members. Alpine tourists now want to know the particulars of the following "courses" which I believe have been recently made: Finsteraarhorn, Jungfrau from Grindelwald, Altels, Galenstock, Dom, Weisshorn, Zinal Pass, Crête à Collon, and many others.'

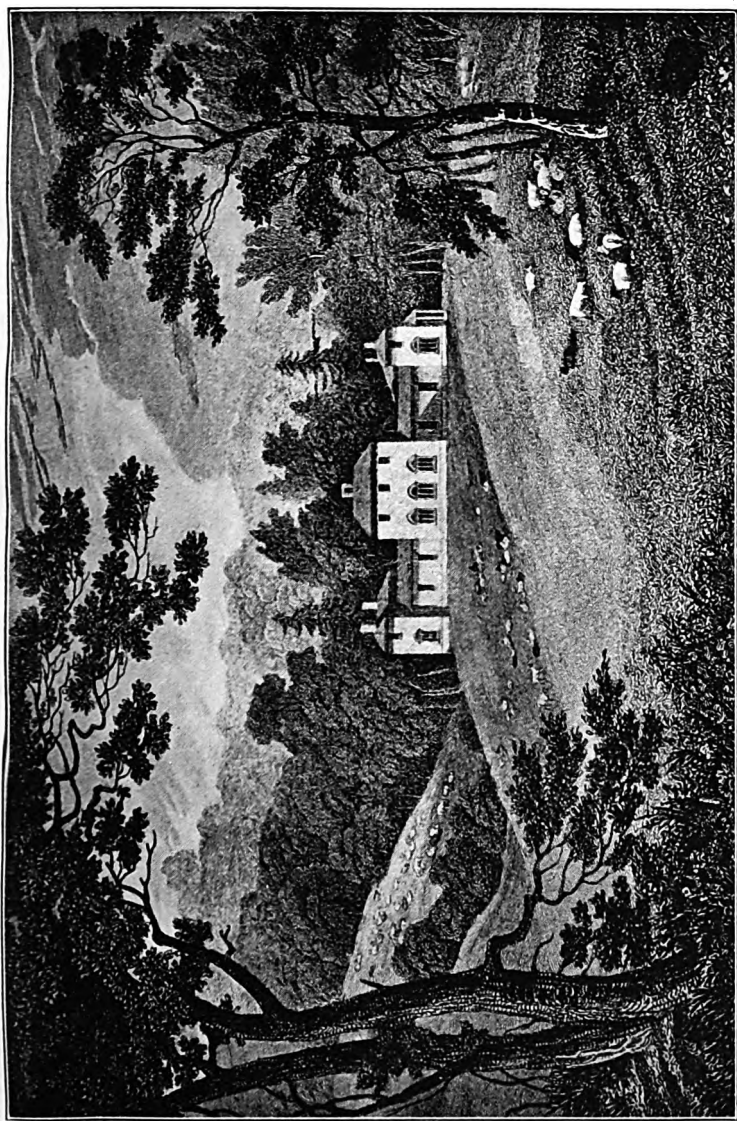
He returned to the subject two or three weeks later and wrote again in June:

'A propos of the Alpine Club, I should suggest sending circulars next October or November to all the best-known mountaineers, and getting them to dine together in London, at as cheap a rate as you like; we could then discuss whether anything further could be done, and see how the thing would be likely to answer.'

In the meantime Mathews may well have been encouraged by the timely appearance in the April number of the *Quarterly Review* of an article on 'Pedestrianism in Switzerland,' in which the subject of mountaineering is exhaustively discussed by J. D. Forbes, and its pursuit by 'the lover of scenery and the more general student'—as distinguished from the purely scientific investigator—is urged with remarkable eloquence and power. The appearance of such a paper was a signal proof that the time was ripe.

Later in the summer Mathews with a cousin, also a Cambridge man, journeyed for the fourth time to the Alps. By a happy chance he there encountered and made the acquaintance of E. S. Kennedy, to whom in the course of a stroll in the Haslithal he imparted his great idea. Their two parties joined forces, crossed the Strahlegg together and made the first English ascent of the Finsteraarhorn a few days later. 'During this expedition,' wrote Mathews' brother many years afterwards, 'the formation of the new Club was actually determined upon, and it is not too much to say that the infant's cradle was rocked by Kennedy on the summit of the Finsteraarhorn.'

In November Kennedy visited the Mathews family and a definite course of action was resolved upon. From this time onward it was he who took the leading part in carrying Mathews' idea into practical effect. Kennedy occupied at this time a somewhat peculiar position. Being of independent means and without any regular profession, four or five years earlier,



THE LEASOWES, near Birmingham,
where, at a dinner on November 6, 1857, the formation of the Alpine Club was proposed.



23, SAVILE ROW.
1920.

at the age of 35, he had taken the remarkable step of going to Caius College, Cambridge, where he renewed his youth as an undergraduate, took his degree with Honours in Mathematics, and rowed in his College boat. He thus seems to have formed a natural link between the men of his own age or thereabouts on the one hand, and the group of young Cambridge climbers, most of whom had been his contemporaries as undergraduates, on the other. He was ably seconded by T. W. Hinchliff, the senior among the younger men, who as the first Hon. Secretary enjoyed an equal popularity.

Circulars were sent out with a set of proposed rules for the Club, inviting 'all who have explored high mountain regions' to join it, and stating its objects to be 'to facilitate association among those who in their admiration of natural grandeur, possess a similarity of taste'; to enable its members to arrange joint expeditions; and 'to give them an opportunity of consulting the maps and plans to be placed in the rooms which it is expected the Club will eventually possess.'

The nascent Club numbered twenty-eight members by the end of the year, and eleven of them were present at its first meeting, which took place on December 22, 1857, at Ashley's Hotel, Covent Garden.

It is now usual to speak of this day as the one on which the Club came into existence, and the Winter Dinner, the great annual function of the Club, is regarded as a birthday anniversary, while the status of 'original members' is restricted to those who signified their adhesion before the end of 1857. William Longman, however, in his history of the early days of the Club is probably correct in considering the meeting of February 3, 1858, as the occasion on which the Club was definitely constituted as such. He includes as original members those who were elected at the January meeting. The distinction is really not one of substance; in at least one case it turned merely on temporarily missing a letter through absence from home. In any case many of the 'original members' were in no sense 'founders,' while several of those who had been most prominently associated with Kennedy in the great expeditions of 1855, notably Charles Hudson and the brothers Smyth, did not actually join the Club till a year and a half later.

Discussion at this first meeting centred mainly on the rule which provided that no candidate for membership should be eligible 'unless he shall have ascended to the top of a mountain 13,000 ft. in height.' It met with severe criticism, some of

its opponents going so far as to make their membership depend on its withdrawal. The rule as it stood would probably have resulted merely in a large increase in the number of the ascents of the Breithorn. Fortunately the opposition prevailed, and there was substituted a provision that a candidate before coming up for election by the Club should submit 'a list of his literary contributions or mountain expeditions' to the Committee, which should be the judge of its sufficiency.

It is this requirement of a special qualification, combined with an election of the kind prevailing in ordinary social clubs, which has given the Alpine Club its distinctive character. The Committee interpreted its powers from the first in a liberal sense, and the alteration of the formula in 1878 to 'a list of mountain expeditions or a statement of contributions to Alpine literature, science, or art,' was no change but merely a recognition of the established practice. In dealing with purely mountaineering qualifications, which of course were far the most numerous, for the first six or seven years the standard set up was by no means a severely high one, a couple of ordinary glacier expeditions being in many cases accepted as sufficient. As time went on the Committee inevitably grew more and more exacting with regard both to the amount and the quality of the climbing of would-be members; no attempt at precise definition has ever been approved of by the Club, but during the last twenty years, three good seasons, and more recently four, in two or three different Alpine districts, have come to be regarded as the indispensable minimum.

Longman has recorded with affectionate minuteness the meetings (including the first summer dinner) which took place during the remainder of the year. They were mainly occupied with the further elaboration of the rules and the election of new members, and the most important achievement of the Club in 1858 consisted in securing John Ball as its first president. Ball as a climber, an explorer, and a man of science, was ideally fitted for the post, but he had also attained a prominent position in the political world, and in his case, as in E. S. Kennedy's, a piece of personal history here enters into the story. At the General Election in 1857 he lost his seat in Parliament; in February 1858 he stood for Limerick. Everything points to the conclusion that his acceptance of the offer of the presidential chair depended on the result of the election. Fortunately he was defeated, and retiring finally from political life, devoted his energies thenceforth to science, mountain exploration, and the service of the Alpine Club.

At the general meeting in November an important resolution was carried 'That members should be invited to send to the Honorary Secretary a written account of their principal expeditions, with a view to the collection of an interesting set of such documents for the general information of the Club.' Through the energy and initiative of Ball, a volume consisting mainly of such accounts was published early in 1859, with the title of '*Peaks, Passes, and Glaciers, a series of excursions by Members of the Alpine Club.*' The majority of the excursions described had been made in the two preceding summers.

Its success at the time was immense, and, needless to say, it is still read by English climbers, and valued as the first fruit of the activities of their predecessors.

The summer of 1859 was one of much brilliant achievement, and Leslie Stephen and Tuckett stepped at a bound into the very first rank of climbers. But, though the programme outlined by W. Mathews had so far been carried out, the Club had not yet found itself. It was not till November that it secured rooms of its own, and not till the end of the year that it passed a second momentous resolution 'That regular monthly meetings should be held on the first Tuesday of every month from December to June, at which papers by members should be read.' This resolution, though, like the one previously mentioned, it was never embodied in the Rules, has in fact formed the basis of the life of the Club ever since. Except that meetings have not been held in January, and that for a few years papers were not read at the December meetings, it has with very rare exceptions been religiously obeyed from that day to this: indeed, for three or four years before the war meetings were held in November as well, which were quite as well attended as the others. Many of the papers read in 1860-1862 re-appeared in a second series of '*Peaks, Passes, and Glaciers,*' published in two volumes in the latter year, and of course the papers read subsequently before the Club have ever since formed the backbone of the *ALPINE JOURNAL*, of which the first number appeared in March 1863.

The climbing season of 1860 was one of the worst ever known, and to some extent checked the activities of mountaineers; one may conjecture that, but for this fact, the second series of '*Peaks, Passes, and Glaciers*' would have appeared a year sooner. Nothing, however, could damp the ardour of the members of the Club and during the five succeeding summers they carried on their campaign in ever-growing numbers and with ever-increasing energy and success. In 1859 they had

been occupied almost entirely with the three great ranges—the Chain of Mont Blanc, the Central Pennines, and the Bernese Oberland—but in the years that followed they extended their operations to every district of the Alps, and on more than one occasion we find parties making victorious attacks on three or four distinct ranges in a single season.

It is impossible to dwell in detail on this wonderful period, and a mere enumeration of its first ascents and first passages would be intolerably tedious. At the end of it hardly any of the greater summits of the Alps remained unconquered, and of the new ascents made a very large share had fallen to the British climbers.

The story of their achievements is told for the most part in 'Peaks, Passes, and Glaciers,' and the first and second volumes of the *ALPINE JOURNAL*. The numerous maps contained in these five volumes bear witness to the extent and solidity of their contributions to topography, but their topographical work survived in another form in the 'Alpine Guide,' a work unique of its kind, which embraced the whole of the Alps from the Col di Tenda to Vienna. The first two volumes, on the Western and Central Alps, appeared in 1863 and 1864, that on the Eastern Alps was not completed till 1868. The writer was John Ball, who himself accomplished an enormous amount of exploration in the years 1860–1867, especially in the Eastern Alps, and brought to his task, besides his extensive geological and botanical attainments, a rare gift of style, and an astonishing skill in handling his complicated material; but no one man could have carried through such a work unaided, and the book is in a very real sense the outcome of the activities of his fellow-members, as well as his own.

Another important work which was taken in hand during this period was the Alpine Club map of Switzerland, but this, though carefully supervised by a committee of members, can hardly be said to have been their own production. On the other hand, the Club felt great and justifiable pride in another of their publications, the Map of the Range of Mont Blanc, the result of an entirely original survey by a young Irishman named Adams Reilly, who had been inspired thereto by J. D. Forbes, and who carried out his self-imposed task with brilliant and astonishing success.

It must not be forgotten that the work of the Club included the exploration in 1861 of an extensive glacial region in Iceland, and that these years also witnessed the bulk of the exploratory work of Charles Packe in the Pyrenees, and the appearance

of the first edition of his Pyrenean Guide, and of his once well-known map of the Maladetta group. Unlike the achievements of his colleagues in the Alps, much of Packe's work was done single-handed, much with the aid of a single comrade, Count Henry Russell. Their alliance was one of the earliest of the many Alpine friendships that have become historical; the story of it has been told in his own incomparable manner by Henri Beraldi.

The period now under review was brought to a close by the Matterhorn tragedy, the most dramatic and terrible of all Alpine catastrophes. In spite of the appalling character of that event, and of the storm of criticism and attack on mountaineering which it called forth in the public press, it does not appear to have seriously affected the enthusiasm or the energy of the main body of climbers. Nevertheless, it marked the end of an epoch—one which possesses for later generations an almost legendary glamour. Whatever the future may hold in store for mountaineering, nothing quite like those early seasons of the British climbers in the Alps can ever happen again. They had some great predecessors, notably among the Swiss, but these were few and unorganised. Before the climax was reached, there were three rival Clubs in the field, but the Englishmen had a long start, and made good use of their time.

If we pause here to take a general view of the Club in its youthful heyday, one or two features will strike us. A very large proportion of its members came from the learned professions—the Church, the law, medicine—the Civil Service, and the ranks of those engaged in teaching either at the schools or the universities. They were nearly all young men, many of them very young; Edward Whymper and A. W. Moore for instance, the two most prominent of the recruits of 1860, attained the summit of their fame before they were five and twenty. Then as now, they climbed frankly because they enjoyed climbing and found in it an incomparable form of holiday recreation. To speak of them as gymnasts, uninterested in natural phenomena and topography, is ludicrous; at the same time it cannot be maintained that the majority of them were inclined to regard mountaineering seriously as the handmaid of science, and tradition says that John Tyndall, then the most distinguished instance of a man of science who was also a great climber, left the Club in consequence of a jest (which sounds innocent enough now) made on that subject at one of the Club meetings.

The Constitution of the Club was extremely simple. The management of its affairs was left entirely in the hands of a Committee, annually elected at a General Meeting of the Club, consisting of a President, two Vice-Presidents, and five (later eight or nine) other members, and an Honorary Secretary. Each of the officers, except the last, could be re-elected twice, and in theory, became again re-eligible after an interval of a year, but in practice no president and only one Vice-President has ever been proposed again for election for the same office. Members of Committee retired under a system of rotation by which they sometimes continued in office for four years, sometimes for three. Except in the very early years of the Club, they have practically never returned to the Committee in the same capacity. Thus there has been a perpetual flow of new blood into the management; at the same time an ingenious device by which the Committee was empowered to add to itself, three (later five) extra members, chosen from among those who had already served as President, Vice-President, or Honorary Secretary, preserved the element of experience and traditional wisdom.

To the General Meeting of the Club were reserved the Election of the Committee, the Election of Members, and the power of altering the Rules. As regards the first of these it suffices to say that there has been no instance in the history of the Club of any candidate being proposed for any office except those proposed by the Committee itself. The election of members on the other hand has been jealously guarded, and the most considerable reconstructions of the Rules in the early years of the Club took place in those dealing with this subject. Otherwise, scarcely any alteration of substance has taken place in the Rules. A few years ago, the Committee was empowered to choose extra members from among those who had previously served as elective members of Committee, as well as from among those already eligible. Mention is made of this not very important matter because it is the nearest approach that the Club can show to what may be called a constitutional change. Of the growth of powerful local sections, of the problems arising out of the relations, financial or otherwise, between the sections and the central Committee, of questions as to the mode in which they should be represented at General Meetings and so forth, which have filled so large a place in the development of the great European Clubs, it knows nothing. In this sense it has not developed at all, and the rest of its story—apart from matters purely domestic—will be practically

confined to its external activities. This result is no doubt largely to be attributed to the special character of the conditions of admission to membership, which have been already described.

But the differences between the Alpine Club on the one side and the great Continental Clubs on the other are, to at least the same extent, due to the fact that its members were equally foreigners and visitors in all parts of the Alps.

The importance of the converse fact became clearly visible from the moment that Alpine Clubs were founded which possessed Alps of their own; it appears most conspicuously in the special attention devoted to the mountain regions which form part of the national territory, and in the responsibilities undertaken within those regions with regard to huts, paths, guides, preservation of natural beauties and kindred matters. But the absence of these features—important as they are—from the English Alpine Club does not quite exhaust the subject. The lack of what may be called the national element had a positive as well as a merely negative side to it, which not only came prominently to the surface in John Ball's disregard of political boundaries in the '*Alpine Guide*,' but penetrated and coloured the whole mental attitude and behaviour of English climbers. To them the Alps from one end to the other were alike a playground, in any part of which they were prepared to enjoy themselves with equal zest. The existence of such a body of men was, in those early days at least, a not unimportant fact in the development of Alpinism in Europe; to trace its influence would be interesting, but would carry us too far. One practical matter may be noted: it can hardly be questioned that the English practice of engaging guides of any nationality purely on the ground of efficiency, and taking them about from one Alpine district to another, thus enlarging their experience and bringing them into contact with colleagues or rivals from other centres, had a highly stimulating and educational effect on the best men.

To return to the general history of the Club: the great epoch of 1859–1865 was followed by a period of decided reaction; though the leading mountaineers continued to climb with unabated energy, the Matterhorn catastrophe led to several resignations, and there was a marked falling off in the number of new members; the total membership of the Club, which up to this time had increased steadily and rapidly, remained nearly stationary at about 300. There were those who maintained that the Alps were exhausted. Someone

wrote that the Club had performed its work so well that it had destroyed its own *raison d'être*, and ought either to dissolve or to seek new laurels elsewhere. A brilliant beginning in the latter direction was made in 1868, by A. W. Moore, Douglas Freshfield, and C. C. Tucker, accompanied by François Devouassoud. The two latter made a plucky attempt on Mount Ararat, after which they were joined by Moore and carried out a remarkable tour from one end of the Central Range of the Caucasus to the other, beginning with the first ascent of Kasbek and ending with that of the W. summit of Elbruz, and crossing the main chain at two points by high passes over entirely unknown ground. This tour is one of great historical importance, as being the first one in which one of the other great mountain ranges of the world was attacked by a party of experienced mountaineers furnished with modern climbing equipment.

But though it excited widespread interest, it failed like Moore's winter expeditions (1867 and 1869)—another piece of pioneer work—to call forth imitators, and the general life of the Club still languished for a season. In two successive years the number of meetings at which papers were read fell to four, a sure sign of diminished vitality. The revival began in 1872, and it is part of the traditional history of the Club that it was in great measure the work of A. W. Moore who then became Honorary Secretary. In addition to his efforts, a fresh stimulus to mountaineering was supplied by the first ascent of Monte Rosa from Macugnaga, which was accomplished in the same year. There were of course already several instances of mountains being ascended by two or more entirely distinct routes, but this expedition seems to have opened the eyes of climbers to the great possibilities of this nature still offered by the Alps. A new generation of very keen and competent mountaineers, born just too late to have taken part in the first assault on the great peaks, was now coming to the fore, eager for novelty, and very ready to realize that even the topography of the Alps was very far from being fully worked out, and that so far as actual climbing went, innumerable problems were still waiting to be discovered and solved. In short, the 'seventies witnessed a sort of renaissance; the younger men recaptured much of the zest and ardour of the early pioneers, and a fresh impetus was given to English mountaineering which is happily not yet exhausted.

But the time had now gone by in which Englishmen had the field more or less to themselves; other Clubs were well

established and climbers of all nationalities were active, and it would be idle to attempt to disentangle the doings of individual members of the Alpine Club from the general history of mountaineering in the Alps. A few words must be said, however, with regard to the most important of later developments, climbing without guides.

Before the date we have now reached, a certain number of guideless expeditions, of moderate difficulty, had been carried out by members of the Club, unobtrusively, almost shamefacedly, and the official view of the Club on the subject (expressed by Sir Leslie Stephen in 1866, and F. C. Grove in 1870) was extremely cautious and discouraging. Therefore, the ascent of the Matterhorn by three English amateurs in 1876 created a great sensation which extended beyond Alpine circles. These gentlemen, however, did not carry things any further, and the real commencement of guideless climbing on the grand scale was made a few years later by the brothers Pilkington and F. Gardiner, who in the course of three seasons made a number of ascents of entirely new and unknown peaks, scaled the Meije, then the most formidable summit in the Alps, and demonstrated their mastery of ice-craft by climbing the Jungfrau from the Wengern Alp. These achievements compelled a revision of the orthodox view, and set up an entirely new standard of amateur skill. It is noteworthy that they attributed their success largely to having wandered much together among the hills of the English Lake District at all periods of the year, especially in winter. Of their most prominent successors a large proportion acquired skill and self-reliance in the same training-ground, but the further development of climbing within the British Isles belongs rather to the story of the Clubs which were formed later with that particular object. The further history of English guideless climbing in the Alps must also be passed over, for reasons already indicated. Fatal accidents to unguided parties have been very few in number.

Only the briefest sketch can be given here of the work of the Club in other mountain regions of the world. W. Cecil Slingsby did single-handed for Norway what Packe and Count Henry Russell had done for the Pyrenees, and was far more successful in inducing other climbers to follow his example. A second expedition to the Caucasus took place in 1874, in which Moore and Gardiner took part, the Eastern Summit of Elbruz (slightly the higher of the two) was climbed, while Mount Ararat was ascended in 1876 and 1878, after which

many years elapsed before these regions were again visited. In the meantime in 1879-80 Whymper carried out a series of expeditions extending over nearly seven months, among the Andes of Ecuador: they were made partly in order to secure reliable observations on the effect of altitude, and the outstanding feature from the mountaineering standpoint was his two ascents of Chimborazo. In 1882 the Rev. W. S. Green broke quite new ground in the Southern Alps of New Zealand, and almost succeeded in conquering Mount Cook, the monarch of the whole range. He was obliged to turn back when all difficulties had been conquered, in order to secure his retreat. Then after some rather uneventful years, the great attack in the Central Caucasus began. From 1886 to 1890 inclusive, a number of parties, including many famous names, were continuously at work. Some reverses were met with, and one deplorable catastrophe occurred, but the sum total of the successes achieved was very great. There are twenty summits in the range exceeding 15,000 ft. in height, and three of these had been already reached in 1868 and 1874. No less than ten of the others were conquered during these five seasons, besides many other lesser peaks and many new passes. Moreover, in 1890, the Eastern Caucasus (Daghestan) was visited for the first time for climbing purposes, and Basardjusi, its highest point, was climbed. No other sustained effort of equal magnitude has ever been made by the Club outside the Alps.

In 1903 two more of the above-mentioned giants of the Central Caucasus fell to two (unguided) English climbers, who had their full share in the triumphs of that remarkable summer, and so lately as 1913 and 1914 two other ably led guideless parties achieved many successes in the Adai Khokh group and elsewhere.

The exploration of the vast and scattered Alpine regions of Canada started in 1888, when H. W. Topham's party visited Mount St. Elias, and the Rev. W. S. Green introduced the Selkirk range to the notice of climbers and geographers. Two years later Topham, working partly in combination with two Swiss climbers, carried Green's work in the Selkirks considerably farther, after which this field was abandoned for some time to the Americans. Englishmen intervened again with decisive effect in 1897, and in two great campaigns (1898 and 1902) for the first time carried out climbing operations on a great scale in regions remote from the Canadian Pacific Railway. Thereby many unknown peaks were discovered and some of them ascended, a large Alpine area of first-rate importance was

explored and mapped, and the interest of Canadians in their own mountains was enormously stimulated. In the later sustained outburst of mountaineering activity, which followed the formation of the Alpine Club of Canada (1906), Englishmen have had a fair share, but nothing in it calls for further special mention.

Before we leave the New World, mention must be made of two more expeditions in the Andes, both of the greatest interest. In the former E. A. Fitzgerald laid siege for more than seven weeks to Aconcagua, the culminating summit of the whole continent; the ascent of it—the highest undisputed ascent ever made up to that time—was finally twice achieved by members of his party. Among them was an Englishman, S. M. Vines, who also climbed Tupungato, *c.* 21,000 ft. This was in 1897; in the following year Sir Martin Conway attacked the two giants of the Bolivian Andes, Illimani, which he climbed, and Sorata, on which he was defeated about 300 ft. below the summit. Going on southward he repeated the ascent of Aconcagua, and then (1899) proceeded to Tierra del Fuego, where he reached 6,000 ft. on Sarmiento (7,000 ft.), the highest mountain in the island.

Both Fitzgerald and Conway had previously climbed in remote parts of the world. Fitzgerald had made a successful expedition to New Zealand, where, however, the largest and most interesting part of the exploratory work done since Green's visit has been carried out by the New Zealanders themselves. The Club is proud to number several of the most prominent of them among its members, but cannot put their achievements down to the credit of the mother country.

Conway's Andean tour was the last of a series of four undertaken in the course of eight years. He had twice visited Spitsbergen (1896 and 1897), where mountaineering has to be practised under novel and very strange conditions. The earliest, and in many respects the most remarkable of all his journeys, an expedition to the Karakoram Range, took place in 1892. A vast glacial area was traversed and several ascents made, including one of a peak 22,600 ft. in height. This was the earliest instance of an attack on the Himalaya by a fully equipped modern party. It was followed in 1895 by a resolute assault on Nanga Parbat by a famous trio of amateur climbers—rendered memorable by its tragic close in the loss of A. F. Mummery—and in 1899 by Freshfield's tour of Kanchenjunga. From 1905 onward expeditions have been numerous, too numerous to chronicle, the most salient single incident

being the ascent (1907) by Capt. T. G. Longstaff of Trisul, 23,406 ft. This remains the highest measured peak the summit of which has been indisputably reached, though, of course, a considerably higher altitude was attained by the Duke of the Abruzzi and his party.

Before concluding this hurried survey of English climbing outside Europe, reference must be made to the ascent of Mount Kenya by Sir H. J. Mackinder, in 1899, the solitary Alpine triumph achieved by an Englishman in the Continent of Africa.

We may now turn to a few domestic developments in the life of the Club. At the outset the two principal social gatherings, apart from the monthly meetings, were the summer and winter dinners. At first they were about equally popular, but after many years the attendance at the former gradually dwindled, and since 1897 it has ceased to take place. The winter dinner, on the other hand, grew steadily in size and importance and soon established itself as *the* social function of the Club.

At least as far back as 1864 the practice began of having a small collection of Alpine pictures and sketches, lent by members, on view at this dinner. The exhibitions so formed gradually increased in magnitude and interest, and from 1878 onwards they were thrown open during the afternoon to members and their friends, an exceedingly popular innovation. At the Exhibition of 1880 great interest was excited by the photographs of W. F. Donkin, whose work marked a new era in Alpine photography. For two or three seasons he stood alone in this field, and till his death in the Caucasus in 1888 his only rival was Signor Vittorio Sella.

Collections of pictures were also from time to time on view at the Club rooms, but such exhibitions were necessarily small in number, and almost always confined to the works of a single member. Both in this respect and in others the original rooms occupied by the Club became, as it increased in size, more and more inadequate, but it was not till 1895 that a move was made to its present home in Savile Row. Here the Club became possessed not only of more and larger rooms in which its excellent library, pictures, and other possessions could be properly housed, but also of a large hall, equally well adapted for its monthly meetings and for holding picture exhibitions. The result was a prodigious development in the latter direction ; almost at once it became not merely practicable but necessary to have a summer and a winter exhibition every year, one devoted exclusively to pictures, the other to photographs.

These were only discontinued in 1917, and have since been resumed.

On only one occasion has the Club had an opportunity of taking part in a general exhibition; this was when it organised an Alpine Court at the Liverpool Jubilee Exhibition in 1887. The exhibits consisted principally of Alpine paintings and photographs, but some climbing appliances and articles of Alpine equipment were also shown. The Club itself has twice held Equipment Exhibitions and issued Reports on this subject prepared by special Committees (1887 and 1899), besides an earlier Report on ropes and ice-axes (1864).

Its literary output—apart from the *ALPINE JOURNAL*—consists of the volume on Mountaineering in the series of volumes on sport known as the 'Badminton Library' and the revised edition of the first and second volumes of John Ball's 'Alpine Guide.' The former, dealing with the Western Alps, was mainly the work of a single writer, the Rev. W. A. B. Coolidge, probably the only man possessed of sufficient topographical and literary knowledge to have carried it out, but the volume on the Central Alps was a genuine product of the co-operative labours of a large number of members. Books on Mountaineering by individual members are far too numerous even to mention, but it may be observed that the best and most widely known of them are almost without exception composed in varying degrees of Papers which had already appeared in the *JOURNAL*, or been read before the Club. And there is one volume which is in a class by itself and cannot be passed over here. This is the tiny Zermatt Pocket-book, issued by Sir Martin Conway in 1881, entirely original in design and execution, and the progenitor of a very numerous family of Climbers' Guides and Clubführer.

In conclusion, it may be of interest to indicate where and to what extent the Club has narrated its own history. Its earliest records exist only in manuscript, or in the form of circulars, notices, &c. pasted into a scrap-book, but a fairly full account of its foundation and subsequent transactions was begun by W. Longman, a former President, and completed as far as May 1864; it was published after his death and will be found at the end of the eighth volume of the *ALPINE JOURNAL*. After this a gap occurs, as for some years the *JOURNAL* confines itself to the story of the external activities of members. The Proceedings at General Meetings begin to be reported in December 1871, and from this time onward the *JOURNAL* becomes ever more and more fully a complete history of the

life of the Club. In 1880 C. E. Mathews, the retiring President, gave a sketch, commencing in 1855, of the growth of mountaineering from the English point of view. Since that time every President, at the end of his term of office, has delivered a farewell address, in which he has reviewed the history of the Club, and the principal feats of its members, during the preceding three years. These in combination form a fairly complete and continuous narrative. Finally, a paper entitled 'Fifty Years of the Alpine Club,' read by C. Pilkington, himself a former President, shortly after the jubilee celebrations of 1907, provides another general survey of mountaineering history, in which many of the topics here touched upon are treated by a master hand.

THE HORUNGER.

By RAYMOND P. BICKNELL.

(Read before the Alpine Club, March 4, 1919.)

THIS paper calls for some excuse in that it was written as a description of a large number of lantern slides rather than for publication in the JOURNAL. The lantern slides being removed, much of the writing became meaningless. It has, however, been thought that a general description of this very pleasant group of mountains may be of some interest to readers of the JOURNAL and of some future use to climbers. I have therefore rewritten the latter part of the paper, and have tried to turn it into a coherent description of the principal peaks and passes of the group.

The history of my subject is for the most part to be found in the 'Aarbok' of the Norsk Turistforening, which has been published continuously since 1868. English climbers have from time to time contributed papers in their own language to the 'Aarbok,' and these contain useful information. I have given references to them. An instructive paper on the Skagastølstinder by Erik Ullén is to be found in *The Yorkshire Ramblers' Club Journal*, 1906-7. I have given no references to Slingsby's 'Norway: The Northern Playground,' because I have assumed that nobody will be so foolish as to go to Norway to climb without having read the whole book.

The group known as the Horunger, or Horungtinder, occupies the N.W. corner of the wild mountain district known

as Jotunheim, the home of the giants. It is immediately to the E. of the extreme head of the Sognefjord, a narrow arm of the sea running inland for about 100 miles, 50 miles N. of Bergen, that is, in the same latitude as the northern extremity of the Shetland Islands.

The group is very definitely divided from the rest of Jotunheim on the one side by the deep and narrow gorge of the Utlå, and on the other by Helgedal; while on the N.W. side the two valleys are connected by a low pass known as the Keiser—a word of ancient Scandinavian origin and having nothing to do with his late Imperial Majesty. Its geography is simple, for it consists of one main ridge running E. and W., with a number of subsidiary ridges on each side running N. and S. Most of the gaps in the main ridge are very deep-cut, and the subsidiary ridges to N. and S. are in line with each other, so that the group can equally correctly be described as a series of roughly parallel ridges running N. and S. There is a glacier in each of the nine principal valleys between these parallel ridges, some of them, like the Styggedalsbræ, long and comparatively level ice streams; while another, the Stølsmaradalsbræ, is an almost impassable ice cataract. One, the Skagastølsbræ, is peculiar in that it ends in a small lake.

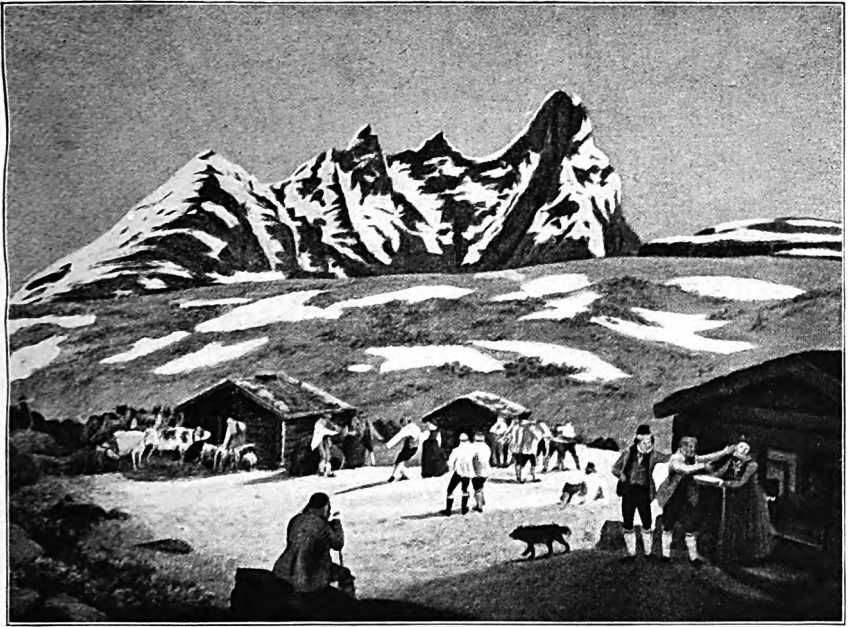
The three principal centres from which these mountains can be climbed are Vetti and Skogadalsboen on the Utlå, and Turtegrø in Helgedal. At Vetti, a remarkable little hamlet of ancient wooden houses in the depths of the Utlådal, close to the celebrated waterfall, there is a primitive inn. At Skogadalsboen, three hours farther up the Utlådal, there is a comfortable group of huts run on hotel lines by the Norsk Turistforening during the climbing season. Turtegrø consists of two comfortable hotels, now combined under the management of the well-known guide Ole Berge. The hotels stand on a bleak and windswept moor far above the tree-line, but they are splendidly situated for the climber, and there is no peak in the group which cannot be climbed from them in a long day.

For centuries the peaks must have been a familiar sight to the peasants who lived round them, for though the only two regularly inhabited valleys near them are so steep and narrow that there is not a single spot in either of them from which any one of the peaks can be seen, they are in full sight of many of the sæters or summer dairies, and can be seen close at hand from the track over the Sognefjeld, which has been used by cattle drovers and horse dealers from time immemorial.

The discovery of the Horunger to the educated and scientific world was begun in 1820, when Flintoe, a Norwegian artist, who was best known as a painter of theatre scenery, held an exhibition in Christiania of what he described as 'A series of exactly drawn views, which show Nature's peculiarities in these to observers of nature as much as to lovers of art, so highly worthy of notice but hitherto so little-known views from the wildest and most picturesque mountain districts of the Bishopric of Bergen.' Amongst these is a view of the Skagastölstinder, the earliest that I have any knowledge of. It is taken from the sæter Skagastöl, about half a mile from the spot where the Turtegrö hotels now stand. It cannot be said that it entirely justifies Flintoe's claim to exact drawing, but it is at least free from that gross exaggeration of mountain form which was still almost universal in drawings of those days.

1820 was a notable year in the history of the Horunger, for in July Bohr, a traveller from Christiania, climbed the easy northern top of the Dyrhaugstinder, which is close to Turtegrö, and thus made the first recorded ascent of any peak in the group. At the same time Keilau, a professor of the University of Christiania, and Boeck, a student, were making their well-known tour in Jotunheim. They made the first ascent of Falketind, which lies to the S. of the Horunger. At the present time Falketind still ranks as a very respectable peak, and its ascent in 1820 was a feat which has never received the credit due to it in the history of the early mountaineers. The ascent is worth making if only for the wonderful view from the top across the gorge of the Utlå to the Horungertinder, nearly all of which can be seen. Keilau made an accurate water-colour panorama of this view, which is now in the library of the University of Christiania. The inscription across the picture runs: 'Snow and ice-covered Alps in the Inner-Sogn on the boundary of the Bishopric of Aggershus (From a top in Koldedal, July 14, 1820).' Their interest in what they saw prompted them to go round to the other side of the range, where they ascended the lowest and northern peak of the Skagastölstinder. From observations which they made they knew that Store Skagastölstind, that is, the big Skagastöl peak, was not far short of 8,000 ft. high, and from this time dates the belief, which lasted for many years, that it, and not Snehatten, was the highest peak in Norway, though Keilau himself rightly suspected that a higher might some day be discovered farther inland in Jotunheim.

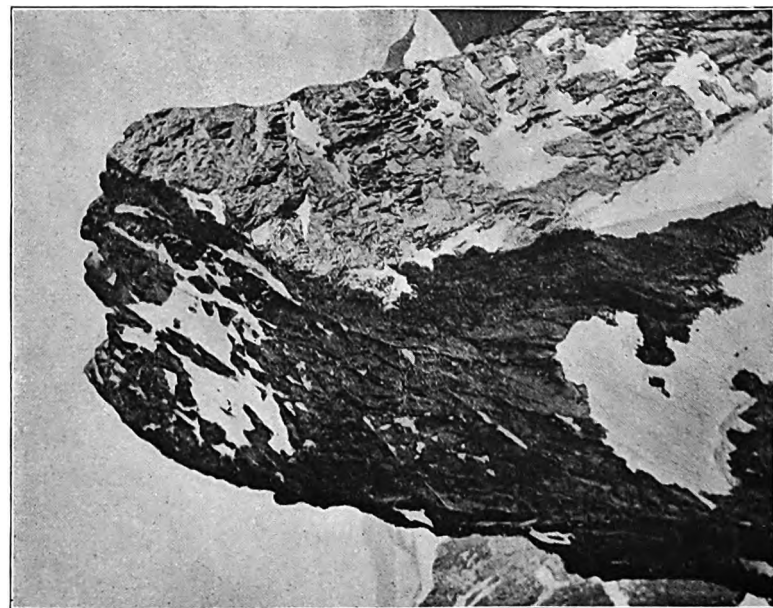
The next year, and again in 1822, the German geologist



THE SKAGASTÖLSTINDER.
(From a picture by Flintoe.)



THE HORUNGER
from the South.
(From a water colour sketch by Keilau.)



STORESKAGASTÓLSTIND
from Vesleskagastólstind.

(Showing Slingsby's route from Mohnskar)



MANDEN AND KJÆRRINGEN
from Gjertvastind.

(From a sketch by Phillis Bicknell.)

Naumann made a tour in Jotunheim. He wrote a long book on his travels, which Norwegian geologists still regard as an authority on their subject. His remarks on mountaineering will hardly be regarded in the same light by mountaineers. He went most of the way up the northern Skagastølstind, but was unequal to the short rock scramble which leads to the top. Here are his impressions of the view as given in his book: 'To the south, about half a mile away, a frightful rock peak which seemed to far overtop our standpoint. But still higher and more frightful towered into the air the two other pointed Skagastølstinder, the very sight of which made us giddy. . . . It was easy to agree with the common opinion that any attempt to climb these peaks would be as criminal as it would be impracticable.' In mountain descriptions of that date one is accustomed to a good deal of this sort of thing, but I have always thought that the use of the word 'criminal' lends a peculiar distinction to this passage.

In the book '*Norway in 1848 and 1849*,' published in London in 1850, one of the authors, Lieut. M. S. Biddulph, described a tour which he made to the Horunger in 1849. He gives two pictures of the group. The one is an excellent lithograph, which gives an accurate view of the Stølsmaradalsbræ, one of the glaciers of the southern side, with the peaks at its head. The point of view is in the forest above Vetti, on the opposite side of the Utlå. The other, a small woodcut, is a general view of the group and is wildly imaginative. Biddulph made short work of Store Skagastølstind. From Fortun, a village on the sea-level and many miles from the foot of the peak, he wrote: 'Had the weather been favourable, I should have been off by sunrise to spend the day rambling upon the fjeld in the direction of Store Skagastølstind, if not in ascending its summit.'

James Forbes, during the journey, which he described in that admirable book, '*Norway and its Glaciers*, visited in 1851,' was within twenty miles of the Horunger when he visited the Justedal, but unfortunately he went no nearer, and there is no evidence in his book to show that he had ever heard of them. In the next twenty-five years the peaks were seen and described by a good many English travellers, but they were reindeer stalkers and fishermen rather than mountaineers. To this period belongs a remarkable water-colour drawing by James Backhouse, now in the possession of Mr. Slingsby. It is a general view of the Horunger from the S., painted during a total eclipse of the sun.

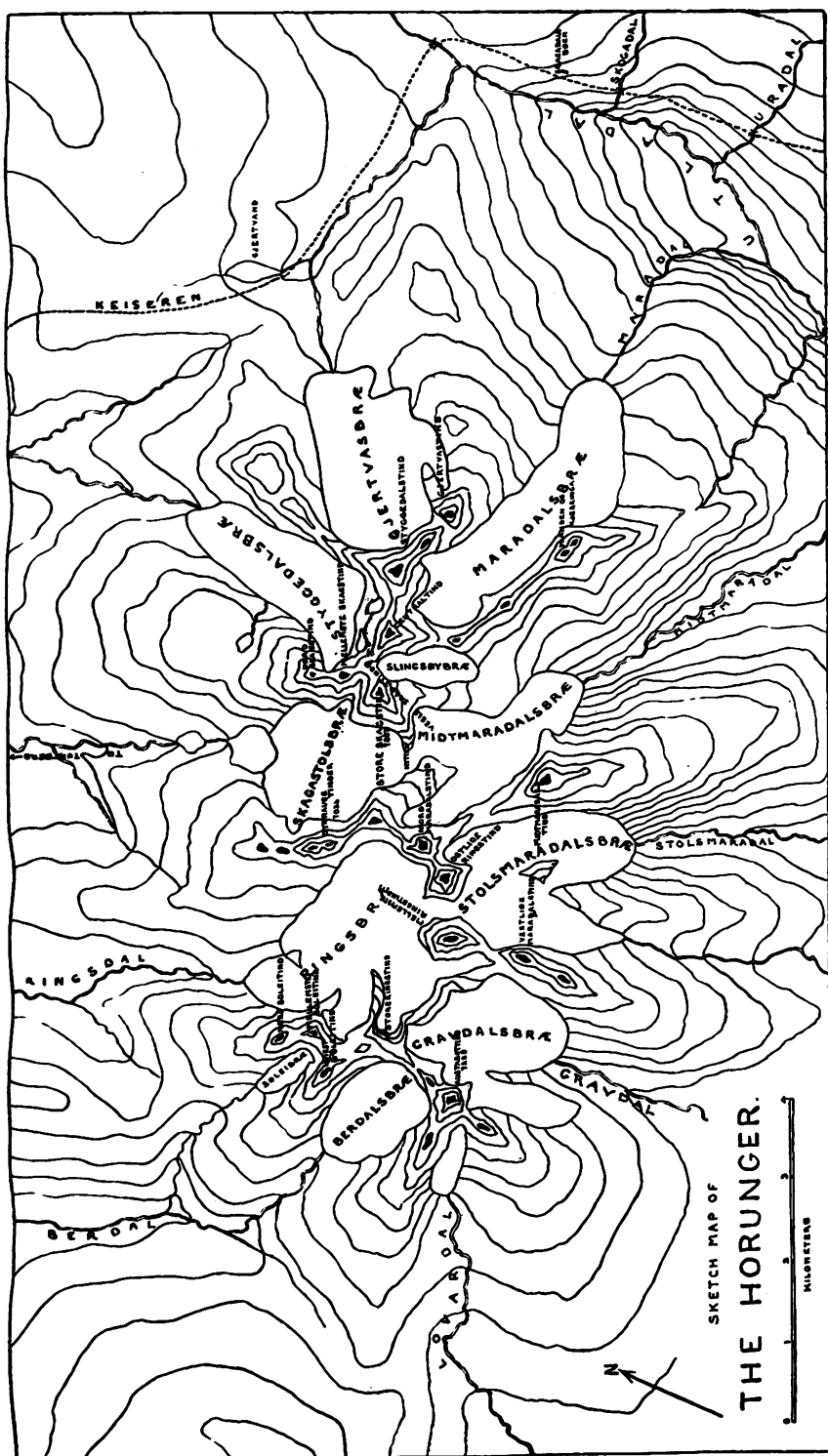
The real history of modern mountaineering in the Horunger

begins in 1874 with the appearance of Slingsby. In that year he and Dewhurst, with the Rev. A. G. Girdlestone and another, crossed the Ringskar, and thus made the first pass over the main chain. They started from the S., and cutting their way up the icefall of the Stölsmaradalsbræ descended on the other side by the Ringsbræ.¹ This was a first-rate ice expedition, and though another and much easier way of reaching the Ringskar from the S. has since been discovered and frequently used, I cannot find any record of the passage of the icefall having been made again till I came down it in 1911 with Peder Bjerk, a Norwegian porter. We were in thick mist most of the day and saw little of our surroundings. We groped our way down the left side of the glacier till we came to the top of the icefall. There we took to the rocks to avoid a region of crevasses, which appeared to be quite impassable, but the slabs were so steep and smoothly polished by ice that we were soon driven back. We worked our way along a ridge between two immense crevasses right out into the centre of the icefall, where the surface was less broken, and then spent three very busy hours cutting down to the snout of the glacier.

In the same year, 1874, Slingsby and Dewhurst camped in Stölsmaradal, in the hope of climbing Store Skagastölstind, but were driven away by bad weather. Slingsby returned to the attack in 1876, accompanied by the Norwegian traveller Emmanuel Mohn, and Knud Lokken, a native reindeer hunter, who, on the strength of having assisted at the first ascent of Knuthulstind, an easy peak in South Jotunheim, had acquired a reputation as a mountaineer which appears to have been wholly undeserved. They began by going up Gjertvastind, at the extreme eastern end of the group. This expedition is notable as the first ascent of any peak on the main central ridge. Then they turned to Store Skagastölstind, which by this time had attracted general attention. The whole story of the first ascent has never been fully told in English, Slingsby having been too modest to describe all the moral and physical difficulties with which he had to contend. Mohn, however, made no secret of the minor part which he played, and it is from his description, published in Norway soon after the ascent, that I have drawn some of my information.

The three adventurers set out from Vormelid in Utledal, which is a great distance from the climb. They had two high ridges to cross and a long, rough descent into Midtmaradal,

¹ *Aarbok*, 1878, p. 83.



SKETCH MAP OF
THE HORNGER.



P. Keith Murray.

STORE AND VESLE SKAGASTØLSTIND WITH THE HEAD OF SLINGSBYBRÆ
from the top of Centralind.

from the head of which valley the attack was to be made. From previous examination they had learned that a narrow and steep little glacier, invisible from all but a few points of view, winds down the eastern and southern sides of the peak, and that at its head a steep snow or ice slope leads up to a gap some 600 ft. below the top. On Whympers principle of attacking a mountain on the side where the snow and ice run highest, they had decided that this glacier, which has ever since been known as Slingsbybræ, was the most likely line. The lower part of the glacier is steep and heavily crevassed. Mohn confesses to various slips, which were only limited by the length of the rope, and at one point he fell off a narrow snow edge at the side of a crevasse.² The upper part varies greatly from year to year, but is never easy. At one point near the top a protruding band of rock with a wall of ice above it is sometimes a formidable obstacle. At last they got up the final slope into the gap between Store and Vesle Skagastølstind, which is now known as Mohn Skar. From the skar the rest of the climb looks most exceptionally hopeless. Mohn was exhausted and quite unfit to go on. Lokken remarked that if the Englishman wanted to kill himself he could do so alone. There are few more thrilling passages in Alpine literature than Mohn's description of how Slingsby, undaunted by this want of support, went on alone and completed the climb, arriving at the top at six in the evening. The upper part of the mountain is a narrow wedge of rock, the sharp edge of which runs down to Mohn Skar. The way lies entirely on this edge, which is excessively steep, though judged by modern standards it is not difficult when free from snow and ice.³

The mountain was not climbed again till 1878, when a Norwegian artist, Harald Petersen, repeated Slingsby's climb. He also was accompanied by Knud Lokken, who once again distinguished himself by deserting his companion in Mohn Skar, leaving him to complete the ascent alone.

In 1879 the well-known route up the other side of the moun-

² This lower part of the glacier is now usually avoided as there is a quicker route on the rocks on its W. side.

³ Mr. Slingsby tells me that on the first ascent he considered it impossible to climb the ridge direct from Mohn Skar, and that his greatest difficulty was on the face to the left before he was able to get back to the ridge: furthermore, that Petersen met with a similar difficulty, and after subsequent visits to the place they were both of the opinion that there had been a great fall of rock which had made it possible to keep closely to the ridge.

tain was discovered by a Norwegian party organised by Hefty, who published a pamphlet of sixty-three pages describing the climb. From this pamphlet I gather that they intended to follow Slingsby's route; but they do not seem to have known where it was, for they started up the opposite side of the mountain and went up the W. face. This face is very easy at first, but becomes steeper and steeper as one goes up. At last they were stopped by the almost vertical wall just below the top, and after a good deal of wandering about they discovered the traverse round to the right and the chimney by which the climb is finished. This has become the usual route, and is used far more often than any other. It is entirely a rock-climb, and with the exception of Hefty's chimney it is easier and less interesting than Slingsby's route, which offers a splendid variety of ice and rock work. The upper part of Hefty's route does much to make up for the tameness of the lower part. One goes round to the right till one is on the edge of a great cliff which rises out of the lower part of Slingsbybræ. The chimney itself might be easy were it not that it begins as a narrow crack 9 ft. up a smooth vertical face. The leader has to get into a standing position on the shoulders of his second. This in itself is a somewhat delicate manœuvre till he can get his arms into the crack. Then he has to turn sideways to get his shoulders in, and do the rest by wriggling his body into the chimney. Were it not that there is a good ledge at the foot of the wall, I doubt if the place would ever have been climbed.⁴ I have seen this chimney completely blocked up by ice. It is then sometimes possible to get up an alternative route to the left, known as Vigdal's chimney. Vigdal was not the well-known schoolmaster and guide of that name, but an enterprising native of Skjolden on the Sognefjord, who made the seventh ascent quite alone. He was unable to get into Hefty's chimney, so had to find something else. Vigdal's chimney is easy, but the traverse which leads to it is the reverse. One goes across a slab where friction of one's knees has to make up for absence of foothold. The handhold is none too good and is frequently wet, if not iced.

The greater part of the pioneer work which followed the first ascent of Store Skagastölstind was done in the ten years between 1880 and 1890 by the Dane Carl Hall, who with two Norwegian guides from the Romsdal, a district farther N., made the first ascents of the seven largest peaks which were

⁴ *Aarbok*, 1891-2, p. 31.

left, together with many other new expeditions. Hall left a record of his work in a series of delightful papers in the Year Book of the Norsk Turistforening.

My first visit to the group was made twenty-five years ago at the end of this heroic period. Store Skagastølstind was only climbed eight times in the first eighteen years, and was still looked upon with some awe. I tried to get up both sides, but was defeated by a mixture of bad weather and inexperience. I returned to the attack the next year with my brother. We took as our guide Ole Berge, already a mighty hunter of reindeer and then just beginning to add mountain climbing to his many activities. We succeeded at the first attempt, going up by Hefty's route and down by Slingsby's, thus making the first traverse of the mountain in that direction. We got up quickly, as Berge had climbed the W. face before. Hefty's chimney was adorned by an iron spike which afforded handhold and then foothold at the critical point. This spike has long since disappeared and has never been replaced. The Norwegian mountains are still commendably free from the pitons and fixed ropes with which some natives of the Alps have so industriously striven to spoil their peaks. None of us had ever been on the upper part of Slingsby's route, and we knew very little about the right line. Almost immediately after leaving the top, one comes to an awkward little gap in the ridge. One ought to cross the gap and keep closely to the ridge, but Berge thought that we should go to the right, and led us diagonally down the face. It was the first time that I had been called upon to go down a steep ice slope without a rope above me, and I shall never forget the moment when I had to leave the ridge and cross the first and worst piece. We were soon pulled up on the edge of the cliff, and had to make a most unpleasant downward traverse over ice patches and rock slabs back to the ridge. This was one of those mistakes which it has now become the fashion to classify as variations, but it is better avoided.

In 1899 Andrews and Williamson made a new route by breaking away to the left from Hefty's line and going straight to the top by a conspicuous gully which cuts the upper part of the W. face. This is the most direct and on the whole the easiest route. Since then a route has been made between Hefty's and Andrew's by difficult rocks on the S.W. corner of the peak.

If the Norwegians did not take a very active part in the early exploration of their mountains, their younger generation have made up by a great many brilliant new climbs. To

this period belongs the ascent of the N.W. side by Tandberg and Rostrup, who climbed direct from Skagastölsbræ partly by a shallow snow-filled gully and partly on rocks to its left. So far the climb is fairly easy, but above this they had to go up continuously steep slabs with very small ledges, hardly any of which were large enough to stand on in comfort. Close under the top they were stopped by a perpendicular wall, and after traversing over the edge to their right, they lowered themselves into the upper part of Andrew's gully on a doubled rope and so reached the top. With the exception of these few feet at the top, the whole route was entirely distinct from any other. This climb was repeated in 1917 by our fellow-members Bryn and Sundt, who reached the top without going down into Andrew's gully. It now appears to be passing through the usual stages of a new and difficult climb, for I have recently learned that it has been conquered by a lady. It is none the less an expedition to be undertaken only by very strong parties in the best of settled weather.

Store Skagastölstind's neighbour, Vesle Skagastölstind, *i.e.* the little Skagastölstind, is a fine peak, and only little by comparison. It is most easily reached by going nearly to the head of Slingsbybræ and then up an easy rock face to its S.W. ridge, which can be followed to the top.

Mellemste Skagastölstind was first climbed by Carl Hall in 1884 by an intricate route on the W. face, which is seldom used now that the route along the ridge from the N. has been discovered. I have not been up this way since 1897. I then thought that one piece near the top was very difficult, and a party who have been there recently have told me that my opinion was well founded. In 1886 Hall repeated his ascent and tried to follow the ridge to Vesle Skagastölstind, but was stopped by a vertical slab which is certainly not to be climbed, and which he thought impossible to circumvent. Three years later he traversed the ridge from the S. to the top of the slab, and he and his guide, being let down by another party, completed the traverse to Mellemste. The real conquest was made in 1896 by Patchell and Bowen, who got round to the left and then regained the ridge by a short but difficult crack.⁵ The last obstacle on the ridge of the Skagastölstinder, the V-shaped gap to the S. of the easy northern peak, was overcome in 1900 by a party organised by Slingsby.⁶ The descent into the gap from the N. is easy, but the climb

⁵ *Aarboek*, 1897, p. 53.

⁶ *Ibid.* 1901, p. 114.

up the other side is very good. The traverse of the whole ridge from end to end has now become a popular expedition, and when the rocks are reasonably free from ice it can be done from and to Turtegrö in fourteen or fifteen hours. The ridge is very narrow over its entire length, and on its eastern side a great ice wall goes down to the Styggedalsbræ. This wall has been climbed at three different places by English parties. None of these routes has ever been repeated, and this side is only for those who are prepared to undertake much step-cutting.⁷ On the western side a Swede, Herr Erik Ullén, once climbed direct from Skagastölsbræ up the great rock-wall into Mohn Skar.

I now propose to take the group from end to end and give some indication of how its peaks and passes may be climbed.

Austabottind is the peak at the extreme western end of the group. I have climbed it from Fortun, a few feet above the sea-level, and, as it is over 7,000 ft. high, this makes a very respectable day, equal in height climbed to many of the big Alpine expeditions. The usual route is right along the northern ridge, and when the rocks are in good condition it is an easy climb.⁸ Several routes have been made on the eastern face which rises out of Berdalsbræ.⁹ In 1909 Peder Bjerk and I descended from a point close to the top, first by rocks and then by hard ice. The face is cut from top to bottom by a narrow couloir, which can be climbed easily if the snow is in safe condition without being too hard. Mr. A. C. Roberts, with the Fortun guide Ole Oiene, once descended the southern face on to the Gravdalsbræ. I do not think that there is any published description of this climb, but from what Oiene has told me of it, and from what I have seen of this side of the mountain, I believe that it must be difficult. Anyhow, it has never been repeated.

Store Ringstind is on the opposite side of the Berdalsbræ, from which glacier it rises in an inaccessible cliff. The usual route is from Turtegrö up the Ringsbræ, and then either up an easy rock ridge or on the easy snow slopes on its side.¹⁰

Soleitind is on the ridge which runs N. from Ringstind. It is not a very interesting mountain, but it is close to Turtegrö, and the traverse of its three peaks makes a good day for anyone who wants a short and easy expedition.¹¹

⁷ *Aarbok*, 1894, p. 100.

⁸ *Ibid.* 1893, p. 80.

⁹ *Ibid.* 1889, p. 72.

¹⁰ *Ibid.* 1893, p. 77.

¹¹ *Ibid.* 1888, p. 78.

The next peak, the Mellemste Ringstind, stands right at the head of the Ringsbræ, with two of the passes of the main ridge, the Ringskar and the Gravdalskar, to E. and W. of it. The W. face is very easy, but there is a good climb up the E. side from the top of the Ringskar, and the traverse of the peak makes another good short day from Turtegrö.¹²

Farther S. on the same ridge is the double-topped Stølsmaradalstind. The top can be reached very easily by the southern ridge from Vetti. I have combined it with a crossing of the Ringskar from Vetti to Turtegrö at the cost of a couple of hours. The northern ridge of the northern top is a difficult climb and has not often been done. I have been up it but cannot recommend it, for it is one of the few places in the Horunger where the rocks are really rotten, and the maximum of rottenness occurs where the ridge is at its steepest.

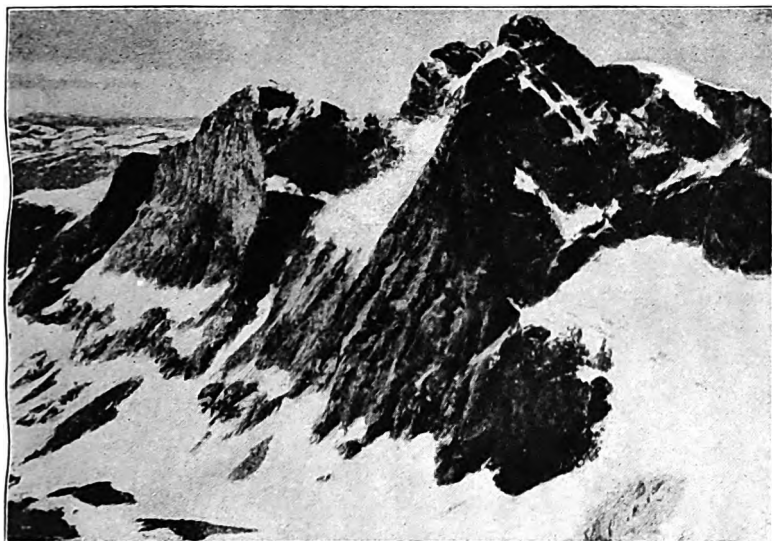
The next ridge runs right through from N. to S. N. of the main ridge it is known as the Dyrhaugstinder, to the S. it becomes the Midtmaradalstinder. The traverse of the Dyrhaugstinder is one of the popular lesser climbs from Turtegrö. One follows a narrow ridge over a number of tops for several hours with splendid views to right and left. From the most southerly point it is easy to get down to the eastern arm of the Ringsbræ and down that glacier to Turtegrö. On the W. side of this southerly point, where a ridge runs down to the pass at the head of Skagastølsbræ, the climbing is of a very different order. Patchell and Bowen made the first ascent of this ridge in 1895.¹³ It has now become a popular rock-climb, and various difficult variations have been invented.¹⁴

The most northerly of the Midtmaradalstinder is easily climbed, but on its S. ridge is a row of four remarkable needles which have occasionally been used as a playground by enterprising climbers. Farther S. the ridge rises to its highest point in Store Midtmaradalstind, one of the big peaks of the group. The northern ridge, though it rises gradually, is extremely narrow and bounded on both sides by precipitous rock and ice walls. Hall tried this ridge in 1886, but was stopped by a perpendicular step about half-way up, and after trying in vain to find a way round it he and his guide were obliged to spend a night on the ridge. A few days later they attacked the mountain again and found a way up the S.W. face; but this route is such a great distance from Turtegrö

¹² *Aarbok*, 1893, p. 79.

¹³ *Ibid.* 1896, p. 66.

¹⁴ *Climbers' Club Journal*, 1913, p. 12.



THE EAST FACE OF MIDTMARADALSTIND
from Skagastølsbandet.

	Skagastølstind.		Styggedalstind.
Maradalstinder.	|	Centraltind.	| Gjertvastind.



THE EASTERN HORUNGER
from the South

Anaahotind.

Storingslind.

Solilind.



P. Kell-Murray.

THE WESTERN HORUNGER AND THE N.W. WALL OF STORESKAGASTÖLSTIND
from above Mohnskar.

or any other habitable night quarters, that the mountain was not climbed again till 1897, when my brother and I with Ole Berge made another attempt on the N. ridge. The first part of the ridge went easily, and there was no difficulty in knowing when we had reached the place which had stopped Hall eleven years before. We found a rough stone wall where his party had slept on the ridge, and immediately beyond it the obstacle. The ridge dwindled to a thin knife edge, and then ended against a perfectly smooth perpendicular slab. We returned along the ridge for a short distance till we found a narrow chimney on the W. side, down which it was possible to climb. Fifty feet down we were able to traverse out of the chimney on to the face, and then, after crossing some narrow ledges, found another chimney which took us back on to the ridge, which we followed to the top. This has since become one of the regular ascents from Turtegrö and the whole journey up and down can be done in about fourteen hours.¹⁵

The E. side of this mountain above the Maradalsbræ is so steep that hardly any snow or ice collects upon it, and it rises from the glacier to the top in an almost unbroken slope of black slabs. It was climbed for the first time in 1908 by a party of three Norwegians. After fourteen hours of difficult climbing they were close under the top when Tönsberg, who was leading, fell off high up in a chimney, and was only stopped when he had fallen past the other two men and had gone the full length of the rope. This was at half-past eight on a Thursday evening. The position was desperate, for Tönsberg was unconscious and had amongst other injuries a broken leg, and it was not even certain that the other two men could get to the top. Bryn stopped with the injured man while Saxlund went for help. He traversed out to the left, succeeded in reaching the S. ridge, and then crossing over the top descended the N. ridge and ran to Turtegrö, where he arrived at one o'clock on the Friday morning. A relief party started as soon as possible, and going back the same way reached the scene of the accident at ten o'clock. They got Tönsberg to the top by hauling him straight up the face with ropes and then took him down the S.W. face, carried him up the Stöls-maradalsbræ, over the Ringskar, and down the Ringsbræ to Turtegrö, where they arrived on the Saturday morning, thirty-four hours after the accident. This story ends better than it begins. All the members of the relief party were awarded the

¹⁵ *Aarbok*, 1898, p. 99, and *Climbers' Club Journal*, 1913, p. 6.

Norwegian medal for valour, which had never before been given to mountaineers for any such service: also Tönsberg made a good recovery, and I have since spent a long day in the mountains with him.

To the E. of the Skagastölstinder, with which I have already dealt, all the big peaks are on the main central ridge. This part of the ridge is cut by no deep gaps, and only one pass has ever been made across it. Little will be done in this region by any party which does not include a man who can use an ice-axe quickly.

Centraltind, so called because it is the culminating point of the group where the greatest of the subsidiary ridges joins the main ridge, is usually climbed from Slingsbybræ by the N.W. ridge, on which there is a short vertical piece, the turning of which may give trouble if the mountain is in bad condition. I went up a few years ago, after an unsuccessful attempt upon Store Skagastölstind, with my friend Keith Murray, who was anxious to climb that mountain before leaving Turtegrö. The attempt was something of a forlorn hope, for it was nearly the end of August and there had been a fortnight of almost continuous bad weather earlier in the month. We got up Slingsbybræ into Mohn Skar without great difficulty, but above the skar the rocks were heavily iced and thickly covered with loose snow. An attempt on the ridge soon brought us to the conclusion that it was too dangerous to be amusing, and we descended to the skar. Then, spurred on by the knowledge that our holiday was almost at an end, we climbed on to the lowest part of the ridge between Vesle Skagastölstind and Centraltind and ascended both peaks. From the top of Centraltind Keith Murray took the photograph of the Skagastölstinder, which is here reproduced.

On a ridge running S. from Centraltind is the Maradals-tind, divided by a narrow cleft into two peaks, colloquially known as Manden og Kjærringen, the man and his old woman. Manden was first climbed in 1885 by Dr. Claude Wilson's party.¹⁶

Next to the E. of Centraltind on the main ridge is the double-headed Styggedalstind. Hall made the first ascent in 1883, going up either on or close to the E. of the northern ridge, the lower part of which divides Styggedalsbræ from Gjertvasbræ. This ascent was not repeated for twenty-eight years, and the fact that it was made does not appear to have

¹⁶ *A.J.* xiii. 153, and *Aarbok*, 1893, p. 82.

been very generally known in Norway. I once examined this side and picked out, as the safest route, what I afterwards learnt was Hall's line. We tried it the next day, and I reluctantly turned back because my companions thought that the final ice slope was too hard and steep to be safe. Hall's route was repeated for the first time in 1911 by an American and German party, who, delayed by the necessity of much step-cutting, had to spend a night on the top, and ultimately got down by following the summit ridge right over Centralind and Store Skagastölstind.

On the other side the mountain is equally difficult. The southern face runs down to the Maradalsbræ. This is the finest yet the least-known glacier in the group, and I believe that the parties who have been right up to its head could still be counted on the fingers of one hand. The gap between Styggedalstind and Gjertvastind is connected with the glacier below by a narrow ice-filled gully some 2,000 ft. high. Hall climbed this gully in 1887, and then from the gap descended the Gjertvasbræ on the other side. In 1888 this expedition was repeated by an English lady, Miss Green, with Thorgeir Sulheim and Anders Eide. Sulheim, a landowner and farmer of Skjolden, was Slingsby's companion in some of his early adventures. He made only occasional but generally brilliant incursions into mountaineering, and was one of the very few Norwegians of his day who was willing and able to lead a difficult snow and ice climb. This pass is in a class by itself amongst such climbs in the Horunger, and I know of nothing to equal it in Norway. Nobody has ever crossed it again; but I speak with some experience, for in 1909 I took part in the third ascent of the S. side, and I have also reached the gap from the N.¹⁷ I need hardly say that the gully is a place to be approached with some caution, and only after careful consideration of the condition of the mountain.

Gjertvastind, the last peak of the main ridge, is very easily climbed from Skogadalsboen by the broad eastern ridge. It is worth going up if only to look over the edge of the extraordinary cliff which runs right up to the top on the S.W. side. The climb between the top and the gap to its W. varies greatly with the state of the ice and snow, but is never easy.¹⁸ When the gap is once reached there is a little further difficulty in following the summit ridge over the top of Styggedalsbræ

¹⁷ *A.J.* xxv. 699, and *Aarbok*, 1891-2, p. 70.

¹⁸ *Aarbok*, 1891-2, p. 70.

and Centraltind. Ardent ridge wanderers have even been known to combine the traverse of this ridge with the ridge of the Skagastölstinder, but it is well to attempt this expedition only at high summer when it is light all night, for it is never likely to take much less than twenty-four hours.

I have now said enough of the principal peaks, and turn to the passes. The quickest way of getting from Turtegrö to Skogadalsboen is round the eastern end of the chain over the Keiser. This is not a glacier pass, and it is possible to get a pony over it; but it is never free from snow, and a good deal is expected of the pony. The four chief passes across the main ridge are none of them difficult. Beginning at the W. end the first is the Berdalskar, between Austabottind and Store Ringstind. There is some difficulty in passing a short but steep wall of rock and ice patches on the S. side, but the N. side is an easy glacier walk.

The Gravdalskar between Store Ringstind and Mellemste Ringstind is an easy pass and the most direct route between Turtegrö and the steamboat station at Aardal, a journey which can be accomplished in one long day.

The Ringskar is between Mellemste Ringstind and Ostlige Ringstind. If the passage of the Stölsmaradalsbræ icefall is avoided by keeping on the flat-topped ridge to the W. of that glacier, this pass offers no particular difficulty, but it is none the less a very interesting glacier expedition and a delightful way of going between Turtegrö and Vetti. They who make this pass in clear weather are rewarded by an astonishing view of the great waterfall on the opposite side of the Utladal at Vetti.

The fourth pass, Skagastölsbandet, is a wide snow col connecting the Skagastölsbræ with the Midtmaradalsbræ. On the top, close under Store Skagastölstind, there is a small stone hut which is about three hours above Turtegrö. On the S. side there is an easy descent to the left of the glacier into Midtmaradal, a valley cut off from the Utladal below it by so steep a cliff that no stock is ever brought into it to graze the abundant herbage which grows at its lower end. The sub-alpine part of the pass is indeed its only difficulty, and those who wish to cross it from N. to S. will do well to make careful inquiries as to how they are to get down into the gorge of the Utlå and cross that river when they have reached it.

A good many passes have been made over the subsidiary ridges—some easy, others excessively difficult. They are mostly of that order of pass which has been described as

leading from nowhere to nowhere, so they are for the entertainment of the mountaineer rather than for the use of the traveller. Some of them are none the less well worth crossing, and I for one have found that little passes do not always make little days. Elsewhere in the JOURNAL I have described how I once spent twenty-eight hours assisting at the first crossing of the gap between Manden and Kjærringen, when we had nine hours of continuous step-cutting in the ice-filled gully shown in the accompanying illustration.¹⁹ After this expedition I took an interval of an hour for a meal at Skogadalsboen, after which I had occasion to make a hurried journey over the Keiser to Turtegrö, where I arrived at the end of the thirty-seventh hour of a very active day. As an example of what can be done with better management within a reasonable day I recall a pass-crossing expedition which I made with Peder Bjerk in 1908. We began by going from Turtegrö to the head of the western branch of the Ringsbræ, and then made the ascent of a difficult little ice and snow-filled gully to a gap in the ridge just to the S. of Soleitind. We then went down to the Berdalsbræ and up to the head of that glacier, crossed the main ridge pass over to the southern side of the chain, traversed the upper part of three glaciers on this southern side, crossed back to the northern side by Skagastölsbandet and so back to Turtegrö. We had been away thirteen hours, and in that time had crossed six different glaciers and the five passes between them.

THE SOUTHERLY WALLS OF KANGCHENJUNGA
AND THE RATHONG PASS¹ (I.A).

By HAROLD RAEBURN.

FIRST EXPEDITION.

KANGCHENJUNGA,² 'the Five Great Snow Peaks,' is one of the best known of Himalayan mountains. Its photograph from Darjeeling has been frequently reproduced, and the view of its snows from that rail-head and much

¹⁹ *A.J.* xxv. 706.

¹ Pronounced 'Ratong,' with a very faint aspirate before the 'o.'

² Lit. Kung-chen-dzö-nga, 'snow-great-peaks-five.' I believe its original name was simply 'The Great Snow,' analogous to Mont Blanc, Elbrus, and Ben More.

frequented hill-station is one of the modern seven wonders and glories of the world.

It is nevertheless the fact that even now comparatively little is known of the inner recesses of its glaciers, and the number of parties who have trodden its snows can be counted on the fingers of one hand. No climbing has been done on Kangchen itself, except the two attacks from the S.W. or Yalung side, that of Dr. Jacot Guillarmod in 1905, and the second of the expeditions of 1920.

Reasons political and climatic largely account for the mountain climber's neglect of this magnificent group. A good one-half is in the jealously guarded country of Nepal, and it is only recently that the Sikkim side has been made more easily accessible in the political sense. The physical difficulties of access still remain, in Native Sikkim, practically as great as in the time of Sir Joseph Hooker in the middle of last century, and the cost of an expedition to the snows, involving as it does the employment and feeding of a large number of coolies, has very greatly increased of recent years. This naturally tends to discourage adventurous young officers or civilians on leave or holiday at Darjeeling from attempting any expedition of importance.

In 1920 I was fortunate enough to be able to carry out a project long thought of and planned, viz., to make a reconnaissance of the southerly accesses to Kangchen. The mountain is now reckoned by the best authorities³ as probably the second highest in the world. I had another object, and that was to get as near as was politically possible to the world's highest peak, Everest.

Darjeeling in the rains is not a cheerful or encouraging starting-place for the would-be mountaineer. To compare the conditions prevailing for the first week or so after my arrival with the very worst weather Skye or the English Lakes can show, would give a balance strongly against the Indian centre.

The view consisted of mist, more or less dense, and the roaring of the rain on the roofs—sheet-iron painted red—of the town seldom ceased day or night. At last one morning came a magic change. From my window at dawn, above the billowy clouds which hid all the intervening ridges, rose into the northern heavens vast domes and peaks of purest white, the Kangchenjunga range, smothered in new snow.

* See Burrard and Hayden, *A Sketch of the Geography and Geology of the Himalayas*. (Calcutta, 1908.)

As the highest ridges are composed of a beautiful pale granite rock, it requires the long shadows of the dawn or of the sunset to define where snow ends and rock begins.

On July 22 the first expedition left Darjeeling. It consisted of two Europeans, Colonel H. W. Tobin, D.S.O., and myself, with Sirdar Gyaljen (Sherpa), cook Kusay (Lama or Tammung), and twenty-one coolies, four of whom were women. These and four of the men were to be sent back when our hill base was gained.

The objects aimed at were the examination of the S.E. outliers of Kangchen, the investigation of possible (?) routes up its S.E. face, and the complete traverse of the Talung Glacier. ('Talung' = valley of the rock avalanches—Waddell.) Very few parties appear to have been on this glacier. The only published accounts I can find are those of the late Sir Claude White⁴ and of Colonel Shawcross.⁵

Neither Graham's party in 1883, or Freshfield, Garwood, and Sella's in 1899, actually descended from the southern approach, the Guicha La (16,400 ft.), on to the glacier.

Our 1920 party started out by the Jongri route. For the first three nights we had the comfortable bungalows, with fine gardens and lovely views, when clear, of Chakung, Rinchin-pung, and Pemionchi. On the fourth we stayed in a Bhutia farm-house at Tingling. With suitable precautions, such as laying down a sheet of waterproof on the board floor and putting up a barrage from a couple of Keating quickfrirs, we passed a peaceful and tolerably comfortable night.

The small son of the house (about ten) was learning to be a Lama. He was most diligent and devout, if a trifle monotonous. For over an hour at evening and again at dawn he chanted from a sheet of torn and dirty paper, inscribed with Tibetan characters, to his admiring mother and relations, and some of our coolies. His mother was greatly pleased when I congratulated her on her son's learning.

Next day, July 26, we crossed the Rathong and climbed up to Yoksun. Here we again put up in a Bhutia house. This time a small private (!) room, partitioned off, was assigned to us. We observed, however, that there were numerous peep-holes, each generally occupied by the bright and wondering eye of a youthful lady or gentleman of our host's family.

We had had a fine day to start with, but heavy rain always

⁴ *Sikkim and Bhutan*, 1909.

⁵ 'Round Pandim,' *A.J.* xxii. 591 *seq.*

fell in the afternoon, and the possible camping grounds were very wet and muddy.

From Yoksun a very up-and-down track ascends the right bank of the raging glacier torrent of the Rathong, never very near the river, but the roaring of its unseen waters is like a perpetual thunderstorm. The track passes through a dense jungle of great forest trees and tangled undergrowth. High up in the hollow limb of a giant oak our men pointed out an enormous mass of honeycomb. 'Dang' is the Bhutia word for honey, and they call a bee 'Dangma,' or the honey-mother ('Ma' is really the same as 'Maga,' Greek 'Maia,' our May). Several heavily flooded side 'Chhus,' or streams, had to be crossed, and after refusing to stop at the coolie day-stage, the rock called 'Nybi,' a foul and limited space under an overhanging cliff, we arrived at the place where the Praig Chhu, the eastern branch of the Rathong, is crossed for the long ascent to Jongri. There should be a bridge here, but it was gone, and no possibility existed of crossing.

Our Sirdar thought it might be possible to build a bridge in three days, but I could not agree with him. I had an idea that a passage to the upper Praig Chhu Valley direct, avoiding the extra ascent and detour by Jongri, should exist somewhere on our bank. On questioning the coolies, one, a Nepalese, of the Goorung or shepherd clan (I do not know his name, and he was always called Goorung), said he knew a high route, breaking off from the usual track a couple of miles N. of Yoksun. We took the back track next morning, and led by Goorung, climbed steeply up a ridge running eastwards, just N. of the first big 'Chhu' above Yoksun. The track, overgrown with jungle at first, improved higher. The great oaks, magnolias, and chestnuts changed to rhododendrons, pines, and mountain bamboo, and our E. running spur led to the N. running ridge bounding the watersheds of the Praig and Tangung Chhus.

We passed several bears within smelling distance—I mean of our noses, not Bruin's. The men called the bear what sounded like 'Toom'—the Tibetan is, I believe, 'Tommo.'

The ridge we were now on was called Arralong. It runs up and over the peak styled Longjong (15,500 ft.) on Garwood's map. Always in mist, we skirted the steep rocks of the summit, over open pasture land, with dwarf rhododendron and juniper, and with several bamboo shelters of the mist-dwelling Goorungs. Our highest camp in a little valley beside a huge boulder was 14,000 ft. We then crossed the

western spurs of Jubonu, only very partially seen, and descending slightly past several glacial tarns arrived at Alukthang, called by all our men 'Agluthang.' Similarly, in my experience, all the people near the Kabru massif call it 'Kaboor.'⁶

Sunday, August 1, was an off-day on the Agluthang meadow, covered with myriads of lovely Alpine flowers (18,200 ft.), and luckily the morning was fine. Most splendid views of Pandim, of the glaciers of the Pandim-Kokchirangkang (Dome) cirque, *not* the Kabru cirque, and a glimpse of part of Kangchen's S.E. face through a col, not the Guicha La, at the head of the valley.

There is no direct access to Kabru from this valley, the Praig Chhu, the eastern branch of the Rathong. Mr. W. W. Graham's pioneer party in 1883 ascended Jubonu (19,450 ft.) from here, and thought they had made the ascent of Kabru also. Their claim to have done so is quite intelligible when we read Graham's accounts in the *Geographical Journal* and in the *ALPINE JOURNAL*, along with the very incorrect map he was probably using, the G.T.S. map published in 1885, two years after his visit to Sikkim. Graham's *two* parties, for he visited Jongri in March with Imboden, and again in September with Boss and Kaufmann, did the most and best *climbing* which has hitherto been done in Sikkim.

The four peaks they ascended were in every case the extreme southern outliers of the two southerly prongs of Kabru and of the Pandim group, and were mainly rock peaks. None, I think, much, if at all, exceeded 20,000 ft. in height. Certainly Jubonu, which Graham made 21,800 ft., is triangulated nearly 2,000 ft. lower. The peak on the Kabru S.E. ridge climbed by Graham's party in September 1883 is called on the old map 'Kabru E. Peak.' It is the mountain styled by Freshfield and Garwood the 'Forked Peak' in the former's 'Round Kangehenjunga.' It is like Jubonu, a rocky southern outlier. To the eye it appears little if at all higher than that peak, and its summit is distant from the top of

* Lord Ronaldshay, who camped here with his party in late October, obtained the name 'Wanglathang' from his guides, from the word for a medicinal root gathered here by the Lamas. For the Guicha La he got 'Guichak,' meaning 'Locked Pass.' This seems to me the correct name, as it appears evident that this once frequented pass has been closed for many years, most probably by great rock falls in the Talung Gorge; also from the effects still apparent of the great murrain among the Yaks of forty years back.

Kabru's triangulated peak about *five miles* by the connecting ridges.

The peak Graham and Imboden climbed, on the S.W. prong of Kabru, was ascended in *March*, with the snow-line down to 10,000 ft. It does not look much more than 18,000 ft., or about the same height as the peak 'at the western extremity of the range' which he climbed in September with Boss and Kaufmann. In the case of the last peak—one of the Kangla peaks—Graham was justified in his description of its situation, quoted above, as the map incorrectly makes the Kangla the western end. Graham never entered the Yalung Valley, and in fact never crossed the Nepalese frontier for more than a few hundred yards. This is obvious from his dates and times.

Graham was a most enterprising and plucky pioneer, and deserves the greatest admiration and credit for his brilliant exploits. He was obviously greatly troubled by mist, and his Swiss companions were as obviously misjudging Himalayan peaks by using Swiss standards. If we recognise that Graham's basic error was the fundamental one of mistaking Kabru for Kangchenjunga, it is easy from his dates and times and compass directions to understand where he was, and what peaks his party ascended. Mr. Freshfield's journey in 1899, and Professor Garwood's map resulting from this, adopted by the G.T.S. in the 1906 Sikkim map, makes the matter clear.

From Alukthang we sent back the extra coolies, the four women and four of the men, and crossed the Guicha La (16,400 ft.). I admired the manner in which Colonel Tobin and the heavily loaded coolies ascended the last 1,000 ft. of steep loose boulders. Misty on the northern side, and there were no views from the top. We descended to the lovely flowery grassy recess of Tongshyong Pertam, and pitched camp at 14,500 ft. Numbers of the tall and beautiful flower-spikes of *Rheum nobile* were all around.

The morning of Tuesday, August 3, was again fine, and from 15,000 ft. we got glorious views of the S. peak of Kangchen and its S. and E. ridges, also of Pandim's impossible north-western side. Pandim I believe possible by the S. ridge. Colonel Shawcross made an attack on Pandim,⁷ reaching a height of about 19,000 ft. This was in December. All south-eastern aspects of Kangchen's S. peak are most repellent.

⁷ 'Round Pandim,' *A.J.* xxii. 591 seq.

A great spur springs off its E. ridge, separating a glacier on its N.E. side from the Talung Glacier below Tongshyong Pertam. This glacier is named on Garwood's map Tongshyong Glacier, somewhat unhappily, as it has no connexion whatever with Tongshyong Pertam on the southern side of the Talung Glacier.

Kangchen's E. ridge sinks to 19,300 ft. at the head of this glacier before rising to Simvu on the E.

The N. side of this col (19,300 ft.) was gained in 1911 by Dr. Kellas with some coolies. Dr. Kellas, with his usual prudence and mountain wisdom, did not risk the descent on the S. side.⁸ As far as we could see, the col does not appear suitable for any but well-trained and booted men. The S.E. spur of Kangchen's E. ridge offers a possible access to the S. peak of Kangchen, but it would be along a very elevated route, involving several nights at heights greater than any camps hitherto made. The highest is that of Mr. C. F. Meade and Pierre Blanc on Kamet in 1913—23,500 ft.

The Talung Glacier, as remarked by Colonel Shawcross in 1900, is not correctly shown on Professor Garwood's or the G.T.S. maps. There it is represented as flowing straight S.E. from Kangchen. In reality it is deflected N.E. for a time by a great spur running N. from Pandim, afterwards flowing almost due E. This great glacier has little resemblance to an Alpine or Caucasian glacier. Such a vast mass of dirt and boulders fall on it from the frightfully steep walls which hem it in, that no ice is visible for miles. One can hardly blame the surveyors who for long refused to recognise the existence of any glaciers at all in the Kangchen group. We descended from here the whole length of the glacier, as, unlike the Zemu and Yalung, the Talung has no side moraine furrows. The going was bad, but numerous medial moraine ridges, some with grass and bushes, even small trees, growing on them, allowed us to thread the labyrinth of boulders covering the glacier, and we pitched camp on a small plot of sand. This was just to the N. side of the ice-caves in the snout, whence issued in two torrents the Talung or Rinpiram River. The height I made 12,200 ft.

Next morning, August 4, we failed to discover a possible crossing of the torrent coming from the Tongshyong Glacier, so were forced to ascend the glacier tongue and cross to the S. or right bank of the Rinpiram.

⁸ *A.J.* xxvi. 114 seq. (with map).

The week following was spent in forcing the descent of the wonderful gorge of the Talung or Rinpíram. The scenery is fine in the extreme, but mist and rain, and our anxiety to get through before the coolies' food ran out, tended to diminish our enjoyment of its beauties. No track exists, and a way had to be hewn through dripping forests, through bamboo thickets, much enjoyed by the bears, up cliffs and down clay and stone banks to the rugged boulders of the torrent bed. The walling precipices rise in some places from 3,000 to 4,000 ft. above the river, and from them leaped countless waterfalls, some completely vanishing in spray. At one place the furious Rinpíram plunges with a thunderous roar into a huge chasm some hundreds of feet deep. We had to construct improvised bridges over the various side 'Chhus.' The coolies behaved splendidly under most uncomfortable and depressing conditions, and carried their heavy loads without complaint. They occasionally jibbed a little at the steep clay river cliffs, but the ice-axes and ropes here came in most useful. The former to cut out steps in the nearly vertical clay walls, the latter to secure the loaded men up and down dangerous places, and to safeguard the crossing on slender, shaky, pole bridges which we had to construct over the various flooded torrents met with.

Our only loss was a severe one to me. My ice-axe, a faithful friend of a dozen years, doubly valued as a gift of the late Colonel Harry Walker, A.C., was swept away by one of these flooded torrents.

Our Goorung proved much the best woodman of the party. Indeed, without him I doubt if we should have got through these tangled jungles. About noon on August 9 our good Goorung dropped upon a newly-cut track, presently this improved, and climbing a shoulder we at length came upon a clearing in the forest with burnt trees and patches of maize. The coolies cried with joy, 'Our lives are saved!' They had finished the last of the rice that morning. A most picturesque aboriginal turned up. He was a Lepcha, dignified and taciturn, but guardedly friendly. His garment was a single sheet of cloth forming a kind of kilt, the upper part thrown over his right shoulder, leaving the left side of the body bare. At his side he wore the straight Lepcha 'ban,' or knife, like a Roman sword. His colour was by no means dark, about that of old ivory, and features quite fine and far from unintelligent. The name of his settlement was, he told us, Tingla. It is not on any map.

Chief Tingla was evidently keen to pass on our hungry-

looking company, and declared he had no food to spare, but that plenty was to be got at the village lower down the valley, called Sakyong.

This is on the 1906 G.T.S. map of Sikkim. He sent a henchman to show us his bridge and the way, and we reached Sakyong in the evening—a Lepcha settlement—where we found food in abundance. Our real difficulties here came to an end. From Sakyong we descended to the Talung and crossed by a long bridge of rotten rattans, supporting in V-shaped slings a couple of loose bamboo stems as roadway.

The crossing of this swinging, dancing, slack rope affair, over the leaping snowy cauldron of the great river, was a first experience to Tobin and myself. Perhaps neither of us quite enjoyed it, but of course we acted, for the coolies' benefit, as though we did. We passed Pontong on the other bank and stopped at Be, where is a Sikkhimese bamboo rest-house. We spent a most interesting night in the Lepcha monastery of Lingthem, returning to Darjeeling *via* Gangtok and Teesta Bridge.

Colonel Tobin, whose leave was up, rode the 60 miles from Gangtok in one day. I followed more leisurely on foot down the most beautiful and not too hot valley of the Teesta, riding the 22 miles up from Teesta Bridge. We were well satisfied with our coolies, nearly all Sherpas, like Gyaljen, our Sirdar. When we first encountered the serious difficulties of the Talung Gorge, we gave them the choice of turning back or of pressing on. One and all declared cheerfully and smilingly, 'It is as the Sahib wills.'

The only two passages I can trace of this trackless upper Talung are Sir Claude White's by the left or N. bank, and Colonel Shawcross by our side, the right, in 1900. Colonel Shawcross's trip was made in December, the dry season, and by keeping high up he was enabled to avoid some cutting. His party took, however, only one day less than ours.

I have said nothing about the leeches. These are unspeakable, and what I should like to say would be unprintable.

SECOND EXPEDITION.

The second Kangchen reconnaissance left Darjeeling on September 2, 1920. Mr. C. G. Crawford, A.C., and the writer being the two European members.

We were greatly disappointed that Captain Minchinton, who has done such good climbing in the N.W. and was with

Mr. Crawford last year in Cashmere, was unable to obtain leave.

Through the great kindness of the responsible authorities of India and of Nepal, I had been fortunate enough to obtain permission to examine this time the south-western approaches to Kangchenjunga, from the Yalung Valley in the latter country.

We therefore chose the direct route to what we understood was the highest village in that valley, Tseram.

Our start from Darjeeling was for several days along the favourite excursion route to the N. by the Singalilla ridge. Thirty coolies under Gyaljen Sirdar were despatched the day before *via* Pemionchi and the valley of the Ringbi to Yampung, to make rendezvous with us there.

The first four stages are in British Sikkim, along an excellent riding road with comfortable bungalows on the Sikkim-Nepalese frontier ridge, and increasingly grand views in clear weather.

With Kusay Lama, the cook, we rode along the ridge, staying at Tonglu, Sandakpu, and Falut. Sandakpu (11,929 ft.) is the station from which the best view of Everest is obtained, but it was not till we were leaving Falut that a break occurred in the rain and mist. It was a marvellous view. From our hilltop (11,800 ft.) we could see dozens of great peaks in Eastern Nepal from Gosaintan (26,291 ft.) eastwards. The mighty throne of Makalu (27,790 ft.), however, almost obscured Everest, which is surrounded and guarded by half a dozen 25,000-ft. peaks. These snows, and the snows round the sources of the Tambar, were of course somewhat remote, and seen over many leagues of the dark forest-clad foothill ridges of Nepal. These showed where the vast gulf of the Arun River gorge separated the constellations of Everest and Kangchenjunga. Much nearer, the Kangchen group rose in icy majesty due N. and N.E., with Kabru the most prominent, Jammu the most striking in outline. The eastern peaks of Sikkim were terminated by the graceful cone of Chumalhari (23,980 ft.) on the Tibet-Bhutan frontier, a view of over 300 miles of the mightiest mountains on the globe. Huge masses of monsoon cloud soon poured up the Arun Valley, and rapidly all views vanished. The horse-track leaves the ridge at the Chiabanzan Col, and we here abandoned our ponies, and with a Goorung porter struck up steeply due N. along the Nepal and Native Sikkim frontier. The track is very indifferent, and we had two days of very strenuous up-and-down ridge-walking. The first night was spent on an eyry-like ledge on the Nepalese

side of the hill of Migu, at a height of 12,000 ft. Next day we traversed on the Nepalese side to the valley of the Yangma— pines here and sheltered; then climbed up steeply to the E., crossing the frontier back to the Ringbi basin and Sikkim by an easy pass, the Ghara La, about 14,000 ft. Fine plants of the curious *Saussurea Gossypina* on the col. We then traversed in thick mist round the sources of the Ringbi River, below another Nepalese pass, probably the Tag La of Colonel Waddell (14,350 ft.). We passed the main source of the Ringbi, a rocky tarn ('Tag Mo Tso,' or 'The Lake of the Tigress'?), but the mist was troublesome. We here met two of our coolies, who had been sent up by the Sirdar to look for us but had instead lost themselves. We did not get into Yampung till after dark, a heavy day. Next day, September 7, we crossed the Dui La, or 'Pass of the Devil' (14,900 ft.), and descended to the most beautiful camp in Sikkim, the lovely pine-encircled meadow of Gamothang, or 'The Level Mead,' about 12,000 ft., with a prattling trouty-looking river running by. This has now only the remains of a yak-hut, and is quite deserted, but used once to be a frequented summer station. Next morning we climbed up to right or N.E., to a remarkable lateral moraine running along the valley. The corresponding moraine on the other side has evidently been washed away. The moraine led to a curious region of small glacial tarns and moraine heaps. Evidently this region has at one time been under an ice-sheet. We climbed over a shoulder or pass and descended past the deserted hut of Bogta, honoured by a name on the sixteen miles to inch map of the G.T.S., to a remarkable glacial lake, 'The Lake of the Peacock's Tail.' This is well named, the blue-green waters are dappled with white and other colours, by great boulders lying on the bottom. From here we climbed over to Nepal by the Chumbab La (15,900 ft.). Mist was intermittent. The dominating visible peak is the Kangla Peak (18,300 ft.), streaked with 'glaciettes.' We camped at a big boulder below the Semo La, 'Cold Pass.' Next morning we crossed the La (15,300 ft.), and descended steeply past the remarkable boulder 'Preu g'yab tak,' or 'Monkey-back Rock,' into the valley of the Kangla Nangma. Colonel Waddell⁹ made one of his pioneering efforts to reach the glaciers of the Kangchenjunga group in this direction, and gained the top of the Semo La, but his men would go no farther, for fear of the Nepalese.

⁹ *Among the Himalayas* (1899).

He published a photograph and sketch of the peaks seen from 300 ft. above the pass (15,600 ft.), which are very interesting. I think his identifications of peaks, however, are mainly incorrect. He was too low to see over the 18,000 and 20,000 ft. peaks of the Kangla Nangma cirque to the great peaks beyond.

The valley and river originate from the above cirque, and the stream is the first glacier stream met with on this route. Sarat Chandra Das calls the river the Yangma. The Kang La (pass) to the Rathong on the E. is like the Guicha La N. of Pandim, a side col. In the valley was situated the famous refuge place of Lhatsun Chembo, the patron saint of Sikkim, called 'Namga t'sal,' or 'The Heavenly Garden.'

In Garwood's and the G.T.S. map the name is placed much too high up. The real site is on the glacial flat at the junction of the valley with that of the Yalung.

Crawford and I crossed the stream dryshod by jumping on boulders, but the loaded coolies had to wade mid-thigh. On the N. side we struck a good track coming from the Kang La, which leads over a shoulder to a bridge over the Yalung below Tseram, but the bridge was gone, and we had a stiff fight through jungle and in dense mist and heavy rain up the left bank of the river. We failed to find a crossing and had to camp in rhododendron jungle, very wet and tired.

On September 10 we got over the snout of the Yalung Glacier, about 13,500 ft. The great glacier of Yalung dies out miserably and meanly in a ghastly waste of sand, mud, and boulders, from which sprout numerous small streams to form lower down the river.

The terminal moraines are of enormous size and extent, and the glacier must be nearly double the size of the Talung.

The weather was cold, wet, and misty, no views, and we had considerable difficulty in finding the capital city of this populous-looking valley on the map. It consists of one deserted yak-hut. The monastery marked Dechenrol has been ruined and deserted for about forty years, and the only place now inhabited, by two men in summer, is the middle of three Ramsers. By the way, Tseram is merely Ramser in another form. All throughout Western Sikkim and Eastern Nepal (?) yaks and Bhutias are vanishing, and are replaced for a few months by wandering, bamboo-sheltering Goorungs with their big roman-nosed sheep.

We sent back half the coolies from Tseram. From September 11 to 16 we remained in camp at Tseram. The weather

Jannu.

K.

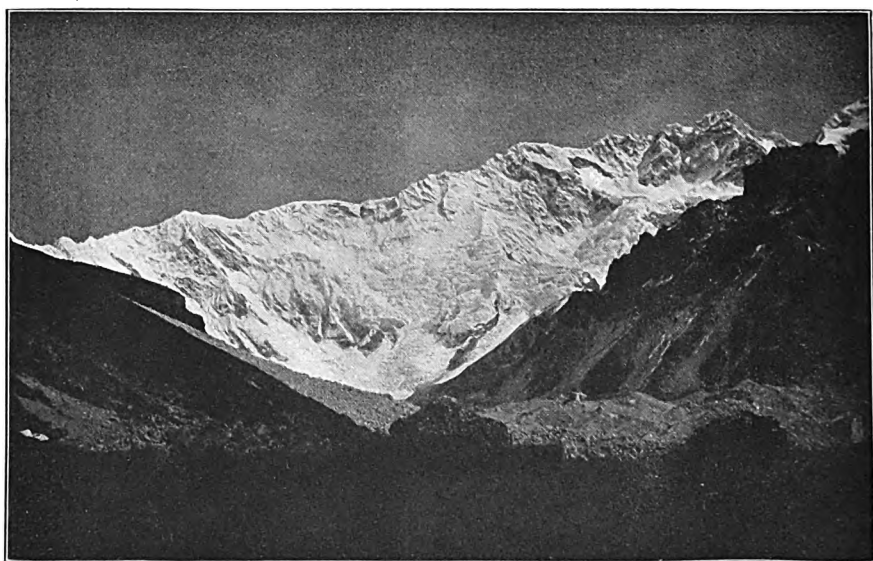


A. M. Kellas.
JANNU (25,300 ft.) AND KANGCHENJUNGA (28,220 ft.) WITH PART OF THE YALUNG GLACIER
from the N.W. Peak of the Kang La Nangma (18,000 ft. approx.).



C. G. Crawford.

LOOKING DOWN TALUNG SADDLE GLACIER
from Kangchenjunga Camp. (P. 47.)



C. G. Crawford.

KANGCHENJUNGA
from Yalung Glacier. (P. 47.)

was vile, and new snow fell down to 13,500 ft. Tseram I made 12,200 ft.

I made with Gyaljen and a coolie a reconnaissance up the valley as far as the highest ruined yak-hut (*ca.* 15,500 ft.), but saw only vast wastes of boulders—a great Himalayan glacier—and lower rocky slopes covered with new snow. Heavy rain and sleet at our height. Crawford had unluckily caught a chill on arrival here and had to stay in tent. As he was feeling the height and cold, we decided to go down the valley for a few days to more genial conditions.

On September 16, leaving Gyaljen in charge, Crawford, cook Kusay, and five coolies and I left Tseram for the winter village. This was called Yengutang, and was stated to be one long day down, two up the valley. The track, somewhat overgrown, drops steeply down beside the foaming Yalung.

The groves of the pine-like tree Juniper at Tseram soon change to giant pines of two species—*Webbiana* and *Brunoniana* (?), tree rhododendrons, and then deciduous forest trees. We crossed at about 9,000 ft. to the left bank; then to our surprise we climbed nearly 3,000 ft. to the top of the ridge bounding the valley on the S. Here we camped in the usual mist. Next day we descended a long ridge, the lower part very steep indeed, into a sunny valley, forested above, cultivated below. The first maize field was at 7,400 ft. We were hospitably received by the headman of Yengutang, who was sick, and his capable-looking wife, and a good house given us for the coolies. We preferred our tent.

People came from far and near to see us with the usual small presents, and our stock of the simpler medicaments was heavily drawn on. The people said no white men had ever been here before, but our route is partly the same as Sir Joseph Hooker's in the middle of last century. I think, however, he entered the valley, which Sarat Chandra Das calls the Kabilée Valley, lower down by a side glen, and his village Yenkutang is a lower part of the same settlement. The people were mainly, especially the women and children, Bhutias, but a number of men working baskets and mats were strongly hindooised, and much darker than the others.

We were interviewed by several men, who stated they were Nepalese officials, and I showed our permit, and also wrote out for the headman's protection a statement as to who we were, and our reason for being there.

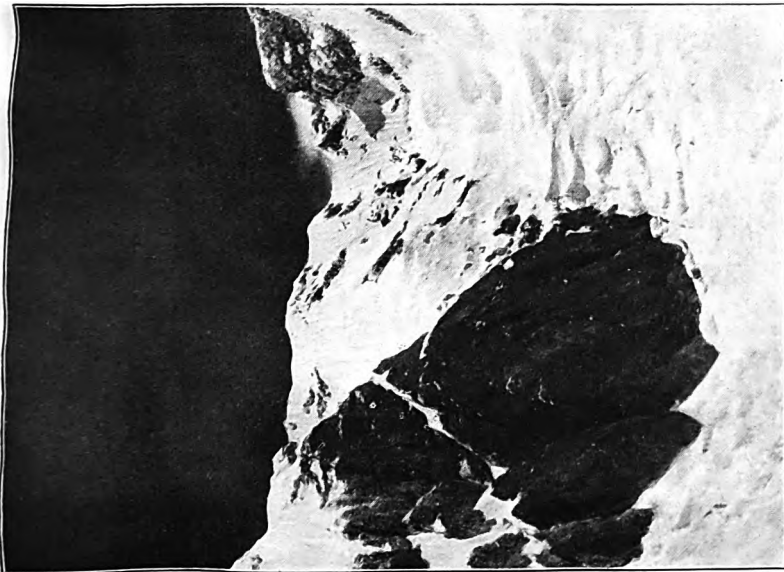
We had a tremendous deluge the night of September 18, after that the weather improved steadily.

We left Yengutang on the 20th, meeting a torrent of the sheep descending from the upper valley. One gain this was, if we lost our chance of fresh mutton, the sheep swept the track clear of leeches. We reached Tseram, in quite fine and genial weather, in a day and a half, and found Gyaljen and the coolies all right, and they had got the extra stores ordered to leave Darjeeling nine days after us. The contract to do this was punctually and correctly executed by Tensing Wangdi of Darjeeling.

On September 23, in fine weather, we started to shift camps gradually up the valley, leaving a few men at Tseram to relay wood. We camped the first night at Upper Ramser, about 15,500 ft. Fine views in the evening of a beautiful sharp peak guarding an evident col at the head of a glacier coming in from the E. This could be no other than the peak styled 'Little Kabru' on the Freshfield-Garwood map. I cannot help thinking this an unfortunate name for such a fine peak, and we propose another, Rathong Peak, as will be seen later it dominates a fine and useful pass between Yalung and Rathong. The maps are very far wrong in the representation of the Yalung glaciers and peaks. Professor Garwood has placed a ? on his map of the glaciers, as his party saw nothing of them except the terminal moraine, some thirteen miles from the source. The Sikhim map has omitted the ?. The only party to visit the glacier before ours was that of Dr. Guillaumod in 1905. From Upper Ramser, as noted, one looks due E. to an obvious col at the head of a glacier pouring into the Yalung from that direction. Little Kabru, or the Rathong Peak, dominates this on the N., but no trace of Kangchenjunga, the Talung Peak, or even of Kabru is visible. The Yalung Glacier, instead of flowing due S.W. from Kangchen, flows nearly due S., then, bending abruptly round almost a quadrant of a circle, flows almost due W. If one reckons it from the Talung Col, then it assumes almost an S shape.

On September 25 we rounded the corner and saw Kangchen's western ridge, partly hidden by a great spur or rib from the Talung Peak.

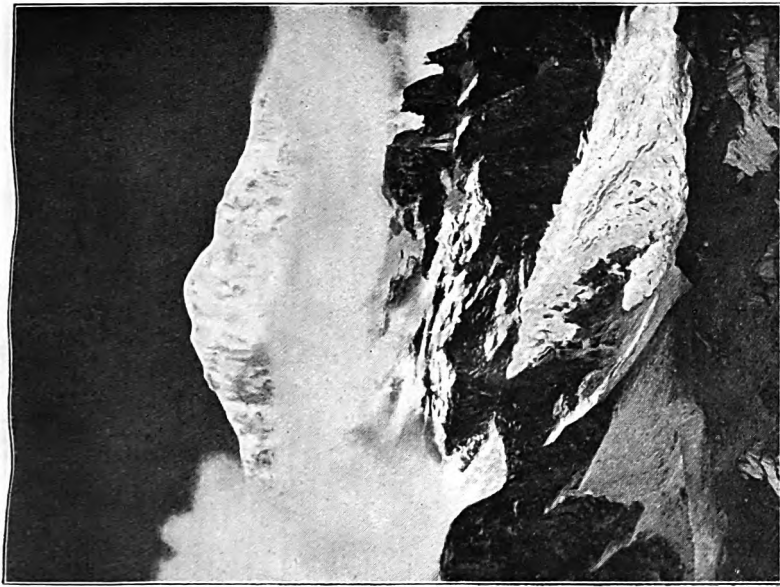
We camped at 'Tso' camp, about 16,000 ft., after crossing an inflowing glacier from Jannu's western spur. Here we found some old tins and a piece of boot-sole, the only relics seen of the 1905 expedition. On the 26th we crossed the huge ice-hills and threaded the boulders and glacial lakes of the Yalung Glacier to the E. or left bank, pitching tents on a sheltered green recess behind the moraine at about 16,500 ft. We



H. Raeburn.

TALUNG SADDLE

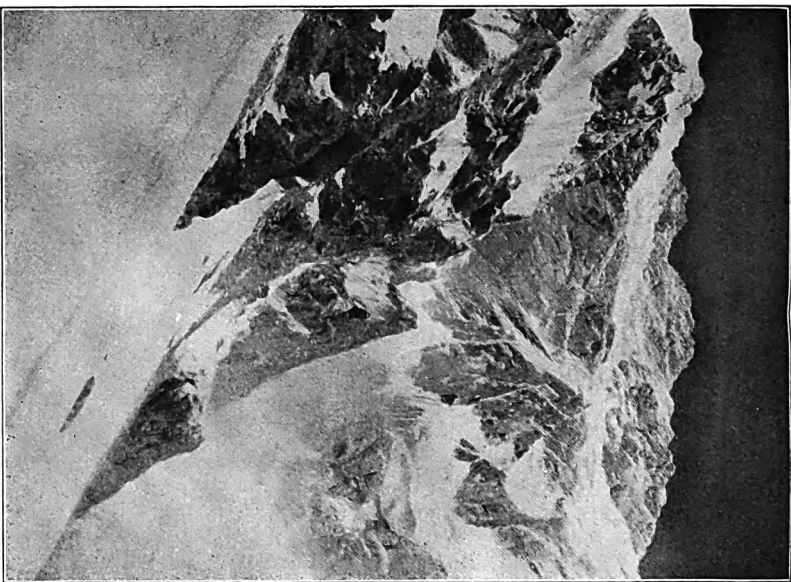
from 20,500 ft. on E. Yalung Glacier. (P. 47.)



H. Raeburn.

RATHONG PEAK OR LITTLE KABRU.

from W. (P. 47.)



H. Raeburn.

S.W. FACE OF KANGCHENJUNGA
from about 20,500 ft. (P. 47.)
(Showing ice dust of an avalanche.)



H. Raeburn.

THE NEPAL SIKHIM FRONTIER (W. SIDE) AT
HEAD OF RATHONG LA GLACIER
from top of Central Moraine. (P. 48)

called this 'Nao' camp, as a herd of *Ovis nahura*, or Burrhel, called by our men 'Nao,' fled from it on our approach. The great westward-running rock rib from the Talung Peak shut out views of Kangchen from here. With Gyaljen and a few picked coolies we crossed, on the 28th, an inflowing glacier from the Talung Peak and climbed to 19,000 ft. up the rock rib. Splendid, but not encouraging, views of Kangchen's S.W. face and of the Talung saddle (22,130 ft.) rewarded our exertions.

Westwards, the really ferocious peaks of the Yalung ridge thrust vast ice-horns far into the cloudless sky. We camped in a good place but a long way for water, at the lower end of the Talung rib, about 18,000 ft.

Next day we made a reconnaissance of the N. side of the rib and camped at about 18,500 ft. on partly snow-covered débris. Our aim was to try to gain a white mantle of snow which from Darjeeling may be seen to lie across the broad bosom of Kangchen, with a sickle-shaped gorget of rock at its upper extremity.

On September 30, with Gyaljen and three booted coolies, we ascended the now snow-covered and crevassed branch of the Yalung flowing from the Talung saddle, and crossing to the rocks of Kangchen's face, made a camp on snow-covered débris at about 20,000 ft. We sent back the coolies the same day, as our men were too few to relay and carry tents as well. Crawford, Gyaljen, and two of the coolies went very well at this height, the former even taking part of the load of a young coolie in addition to his own.

On October 1 the weather was glorious, although very cold before sunrise. We three prospected up Kangchen for about 1,000 ft., but were compelled to recognise that our European, coolie, and food strength was inadequate to allow of any serious attack.

The Talung saddle looks vicious in the extreme, everywhere defended by overhanging masses of ice, and the beautifully grooved accordion-pleated snow skirts of the upper slopes were a serious warning. The roar of the ice avalanches from Kangchen and Talung seldom ceased for long, day and night. An interesting point noted was that, confirming my experience on Elbrus at 18,000 ft., we found steep rock-climbing at nearly 21,000 ft. considerably less trying than hard steep snow. We spent another night at the high camp and descended easily, reaching Ramser yak-hut in two days.

THE CROSSING OF THE RATHONG PASS.

My original plan of campaign embraced the search for a direct not too difficult pass from Rathong to Yalung. This I felt sure must exist. Our discovery of the evident col under Kabru's S.W. shoulder encouraged an attempt to convert this into a 'La,' to which the name of Rathong might apply.

We instructed Gyaljen to take the camp and bulk of the coolies back to Pemionchi by our outward route, there to await our arrival.

On October 4 Crawford and I, with two light tents and three picked booted coolies, of whom the best was a cheery sturdy lad called Durgi, left Ramser for the attempt. We had four days' provisions, extensible to five or six.

We got off at 3.30 A.M., and after walking about half a mile up the Ramser meadows, climbed the high moraine of the Yalung, and managed with some pickaxe work to get the coolies safely down the 150-ft. rubble cliff on to the glacier. By dawn we were over.

Very fortunately the Rathong Pass glacier is provided with a most even and convenient high central moraine, remarkably good going along its narrow top.

Very fine views at dawn of Jannu and of many leagues of the Nepalese foothills, now freely sprinkled with the first fall of winter's snow. Several small glaciers poured into ours from either side. These do not disturb the central moraine. From 9 to 10 we halted, boiled tea with water from a convenient ice-pool, and rested just below the steep rise to the pass. The coolies did not like the look of this. A small ice-fall seemed almost to block it, but on the left or N. we could see an easy passage existed over avalanche débris from the very steep slopes of the peak (Rathong Peak) on the N. Luckily also I observed the footmarks of a snow-leopard, which greatly encouraged our men, and they followed cheerfully thereafter. We easily evaded the ice-fall, and at 11.15 gained the 'Laptse' or pass-top, and on being told 'Nepal-Sikhim,' our boys shouted and laughed in triumph over the croakings of their comrades and the local men.

The E. side opened on the enormous glacier cirque embraced by the two southerly ridges of Kabru. The descent looked very easy, but our men, who plunged ahead with joyous shouts, soon began to sink past mid-thigh. There was a lot of soft new snow here, and it was only after many hours of heavy toil, and being forced for the first time to apply the 'whip' to our tired men in the shape of tots of cognac, that we

succeeded in reaching grass at dusk. We pitched camp beside an infant feeder of the Rathong River, with good turf and juniper bushes. A heavy shower of snow at night. On the 5th we descended to a deserted yak station on the right bank of the Rathong, and crossing with difficulty ascended an excellent path to a col S.W. of Kabur, about 14,500 ft., and descended the other side to Jongri, 13,140 ft.

We camped the same evening in tall forest at Bakhim, and next day crossed the Praig-Chhu by a good new bridge and descended (?) the terribly up-and-down track to Yoksun. On the 7th we made Pemionchi early in the afternoon.

Gyaljen arrived, ahead of the coolies, a couple of hours later, greatly astonished to see us there already.

We regained Darjeeling at 5 P.M. on October 9, but some of the coolies did not turn up till two days later. The track from Jongri was found greatly improved by the Sikhimese authorities in view of Lord Ronaldshay's visit to the Guicha La, carried out at the end of the month most successfully.

The Rathong Pass, with less or harder snow, is an easy pass in an Alpine sense. There are no cairns, except ours, tracks, or marks on it. It seems possible, however, that it may have been crossed during the early migrations of the Tibetans into Sikkim. There is a curious tradition among the Bhutias of a wonderful country of riches and eternal youth at the head of the Yalung Glacier. This tradition is quoted in Mr. Douglas Freshfield's 'Round Kangchenjunga,' from the narrative of Baboo Sarat Chandra Das. The Baboo passed by Tseram and Khunza, and, as I read his description, crossed the Jongson La into Lhonak, and the Chorten Nyma La into Tibet. He tells of the tradition of the magic country of Na¹⁰ Pemathang at the head of the Yalung Valley, where dwelt in peace and plenty seven Lepcha couples. It may be that Tibetan immigrants, keeping above tree level, have crossed from Khunza to Ramser by the Lhapsong La. Then the tempting-looking opening on the far side of the Yalung Valley led them over to the Rathong Valley, there to discover a rich land only inhabited by a few Lepchas. There are evidences, in ruins and ancient cultivation, of a somewhat extensive Bhutia summer settlement at the foot of the track leading over to Jongri by the Kabur Pass.

Our track southward from our pass led us past the foot of the great glacier, really almost one stupendous ice-fall nearly 8,000 ft. high, up which the two plucky young Norwegians, Rubenson and Monraad Aas, conducted a body of coolies to

¹⁰ 'Nga' = five (?).

a great height, and by themselves very nearly gained the top of the *north-east* or untriangulated summit of Kabru. It is most probable their height was 23,900 ft. at least. There is no perceptible difference in the height of the two chief peaks of Kabru. It seems possible the N.E. is the higher.

We also passed very near the site of the camp whence another very plucky climb was made in March 1883 by Mr. W. W. Graham, with Imboden as sole guide. This is a fine sharp peak, mainly rock in summer, and looks about 18,500 ft. high.

THE LATE MAJOR BERNARD HEAD'S EXPEDITIONS IN
THE DART DISTRICT, NEW ZEALAND.

By H. F. WRIGHT.

ON November 23, 1910, Major Head,¹ with the guides J. M. Clarke and Alex. Graham, made the first ascent of Mt. Aspiring, the highest mountain S. of the Haast Pass, which had defied all efforts of climbers to scale it.

This success formed a fitting introduction to a comparatively unknown Alpine region of the Southern Alps. The wonderful array of unclimbed peaks and unexplored country visible from Aspiring deeply impressed Head's party.

In December 1911, with the guides J. M. Clarke and J. P. Murphy, Head crossed from the West Matukituki over a high saddle, which he named the 'Cascade,' on to the Upper Dart Basin. This expedition made the first descent from the Cascade down the Dart River to Paradise. The extent and character of the Dart Glacier (inadequately shown on existing maps) determined Head to put in a summer in this region.

On January 1, 1914, Head arrived at Paradise. He collected ample stores, and had with him the following party—guide J. M. Clarke, the late Lieut. C. Ferrier (killed at Ypres, November 1914), and F. Leonard, Government Surveyor. The work of the latter was to survey the Dart Glacier and correct existing maps.

Head established a camp at Chinaman's Flat and waited patiently for the Dart River to fall, but it was January 26 before fording was possible.

¹ Major Head was killed in Gallipoli in 1915.

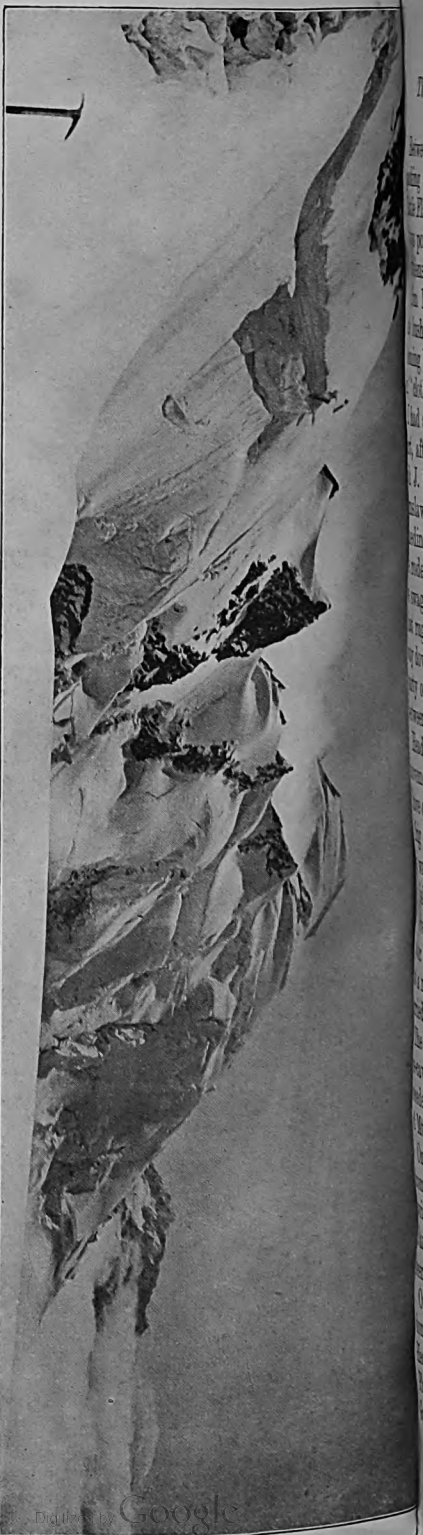


B. Head.

MT. ASPIRING from Quarter Deck Saddle.

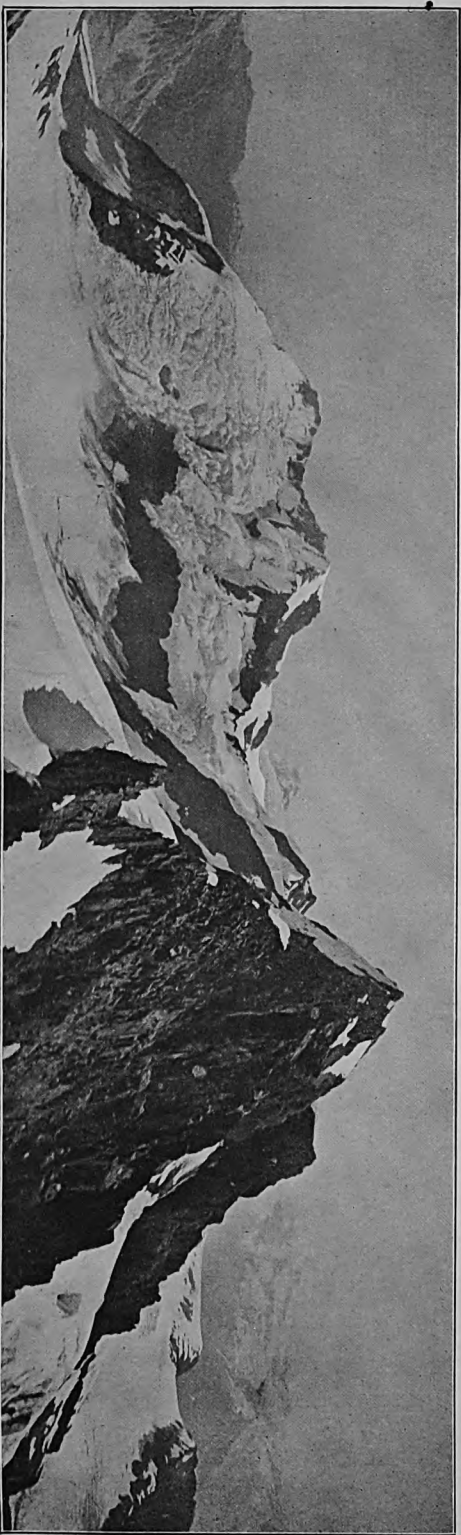


LOOKING ACROSS WHITBURN FROM MT. EDWARD.



B. Head.

MT. EDWARD from Joe's Saddle (about 7,000 ft.).



B. Head.

MTS. MAORIRI AND EDWARD from head of Dart Glacier.

Between January 27 and February 9 the party were busy packing stores, cutting tracks, and erecting a base camp at Cattle Flat. This was the farthest point up the Dart to which it was possible to take horses, as it is rough country covered with dense bush.

From February 8 to 13 the party were busy penetrating the bush as far as Snowy River. Head's notes refer to 'coming back wet,' 'nastiest bit of bush I have ever travelled in,' 'clothes and hands torn,' etc.

I had arranged with Major Head to join him on the Upper Dart, after I had completed my work on Earnslaw. Along with J. Robertson I made first ascent of the W. peak of Earnslaw and Centaur Peak. Robertson then returned to Dunedin, and on February 12 I was joined by J. R. Simpson. We rode to the forks of the Rees and Hunter Rivers, thence we swagged through saddle to Snowy River. We descended that rugged gorge to the Dart, and on the 15th, making our way down, we made an almost dramatic meeting with Head's party on a difficult bench covered with dense bush, midway between Snowy River and the Whitburn.

Head has left a rough diary, with brief entries of his daily movements, and it is from this and my personal recollection I have compiled this short article.

Trig 'J' is located on a high spur near Cattle Flat camp. This was the farthest point surveyed. Leonard was able to establish a trig N. of Snowy River. From there the work of surveying the Dart Glacier was carried out. It proved the glacier to be fully four miles long from snout to névé, and not a mere dot as shown on maps. This important work was carried out between the 16th and 21st.

The Dart River comes away in one large body from a fine ice-cave. The terminal face has the appearance of having receded recently. Head named the tributary glaciers on S. face of Mt. Edward, Hess and Hobbs.

On February 21 ascents of Anstead and Tyndall were made from Cascade Saddle (where Head had his high camp) by the writer and J. R. Simpson. These were first ascents from the Dart side; but it is a moot question whether Tyndall had not been partially ascended previously from the West Matukituki.

On February 22 the whole party of six ascended the three domes on the divide between the Dart and West Matukituki. Head called this the 'Governor's Ridge,' and the three peaks Plunket, Islington, and Liverpool, after the three last N.Z. Governors.

From Liverpool the party looked down on the W. coast and the Arawhatta system. It was clearly evident that no dual range, Barrier and Dividing, as shown on the maps, existed. Liverpool afforded fine views of Aspiring, Edward, and a vast array of virgin peaks, including Moonraker and Stargazer, lying in the basins of the Arawhatta and Waiatoto Rivers.

On February 24 F. Leonard and J. R. Simpson returned to civilisation *via* Snowy River. The reduced party of four returned to Cattle Flat.

On February 26 the writer and C. Ferrier made an ascent of an unnamed peak on Forbes Range from Cattle Flat. This peak was named 'Clarke,' after the guide.

March 1 was St. David's Day. Head's notes state: 'Had St. David's dinner—oxtail-soup, herrings in tomato, rabbit, corned beef, asparagus, plum-pudding, anchovy paste. Drank health in lime-juice, and made Wright, Clarke, and Ferrier eat onion in place of leek.'

Bad weather and the fixing of a secondary camp on the Flat, opposite mouth of the Whitburn, occupied the party until March 2.

On the 3rd the Dart River was successfully sparred in a wild gorge. This is always a ticklish proceeding, as the river is uncrossable otherwise.

On March 3 and 4 the Whitburn Glacier was traversed. It proved a most beautiful and interesting glacier some four miles long. It was almost entirely clear of surface débris, was most symmetrically crevassed throughout its entire length, and had its terminal face closed by narrow rock gates.

On March 6 first ascents were made of two unnamed peaks on the left of the Whitburn, which were named by Head, Marion Tower and Brownlow Tower.

On the 7th and 8th attempts were made on Mt. Edward; but were unsuccessful owing to bad weather, and the party running short of provisions returned to Cattle Flat, whence I had to return to Dunedin.

It was decided I should attempt the ascent of a bold rock peak on the Forbes Range S.E. of Cattle Flat camp. Accordingly, on March 9 I started with a light equipment and bivouacked at 6,000 ft. At 2 A.M. the following morning I began the final ascent, reaching the top at 7 A.M. This peak I named 'Head,' after our leader. Two minor rock towers on N. side of Head I also climbed, naming them 'Ellie' and 'Moirá' peaks. I reached the Dredge Hut that night, and next morning forded the Dart and thence to Paradise.

On March 10, Head, with Clarke and Ferrier, returned to the Whitburn. On the 11th they made the final ascent of Mt. Edward from the head of the Whitburn. This was the culminating point of the expedition. It is a beautiful snow-peak and affords a magnificent outlook. The only lengthy entry in Head's diary was made on the summit, and I give it in its entirety :

' Day gorgeously fine, and the atmosphere crisp, and clear, and still. The view, particularly along the main range N.E. and S.W., absolutely superb ; Mt. Cook, Tasman, and Malte Brun standing out distinct and sharp amidst an array of first and second class peaks. Away in the far N.E. nearly every peak and snow-field of the Cook group could be individualised, whilst Aspiring in the foreground was a most perfect picture. To the S.W. the view was almost equally fine. The peaks, precipices, and glaciers of Lydia, Tiber, Victoria, and of our own group, were clear-cut and interesting-looking.

' To the E. and southwards the valleys of the Matukituki and Rees lay at our feet, while just beyond, the hill slopes of Lakes Wanaka and Hawea are plainly visible. A good portion of the head of Lake Wakatipu and the Glenorchy surroundings seemed surprisingly near.

' To the westward a perfect maze of fine peaks and glaciers of all dimensions appear endlessly, and beyond those the green W. coast bush, and beyond the bush, the long roll of the Pacific.'

On the 11th they ascended Lydia. On the 12th and 13th they traversed the high elevated plateau lying between Lydia and Mt. Maoriri and the Whitburn and W. coast.

It was the minor peaks rising from either side of this elevated plateau that had caused the variations in the E. and W. coast surveys.

This practically finished Head's work on the Whitburn. He has named quite a number of peaks and glaciers which will be shown on future maps. One fine peak on the right of Whitburn he called ' Ian,' after General Ian Hamilton.

He was occupied until the 26th in dismantling his camps and effecting their removal to Paradise.

On the 27th and 28th he made an expedition up the Rees, but bad weather prevented the accomplishment of anything further.

It was Head's intention to return and put in another season in the Upper Dart ; but the war claimed him, and he finished his last climb on the heights of Gallipoli.

JOHNSON'S 'SUPPRESSED ASCENT' OF E 61.

BY MAJOR KENNETH MASON, R.E.

[Attention is drawn to Mr. Freshfield's remarks on Johnson's ascents as long ago as 1884 ('A.J.' xii. 58-60 and xix. 49). Mr. Freshfield had the advantage of personal consultation with General Walker, and came to the same conclusion as now arrived at with such admirable pains by Major Mason, who, however, carries the matter a step further, inasmuch as he suggests with reasonable probability what summit was gained by Johnson in mistake for E 61.

With respect to the treatment of Johnson by the Indian Government, Dr. Collie relied on *R.G.S.J.* 37 (1867) and the obituary by Colonel Godwin-Austen, F.R.S., who, of course, spoke with high authority, in *Proc. R.G.S.*, new series, vol. 5 (1883).]

IN the Alpine Club President's recent 'Summary of Mountaineering in the Himalaya,' he alluded to the late W. H. Johnson's supposed ascent of E 61,¹ and concluded with the remark: 'He was also a marvellous mapper of mountains, but the Indian Government valued his services so low that they reprimanded him for being too zealous in his mountaineering and he left the service.'

In this note I propose to deal with the evidence concerning the climb, and I hope to refute this charge against the Government of India. Doubt has often been thrown on Johnson's climb to the summit of E 61 (Pk. 1/61A), 23,890 ft. Throughout the annals of the Indian Survey, references to altitude records and any high climbs which have been made are very scanty, and I believe it was Dr. Longstaff, about 1908, who first called attention to the altitude record by an Indian *khalasi* on Shilla, in Spiti, in 1860.²

Nevertheless, the E 61 ascent is interesting, for, if correct, and if we except the doubtful ascent of Kabru by W. W. Graham in 1886, it was an altitude record for nearly forty years, until

¹ *A.J.* xxxiii. 296.

² No fewer than thirty-seven ascents to summits over 20,000 ft. can be traced in the records of the Trigonometrical Survey of Kashmir, Ladākh, Kangra, and Kumaon prior to 1865; but no details of the climbs are recorded, and this figure does not include plane-table fixings, many of which are known to have exceeded this altitude. (*A.J.* xxv. 400, T.G.L.)

beaten by Longstaff's attempt on Gurla Mandhata (Pk. 7/62F) in 1905, the height reached by him being generally accepted at about 24,000 ft.

I have been interested in the controversy for some time, and I was convinced by Longstaff's arguments in support of Johnson.³ Longstaff never pressed his own claim to having reached 24,000 ft., and very modestly upheld the view that Johnson reached the greater altitude. It was in conversation with Sir Aurel Stein, who was the first European since Johnson to visit the high K'un-lun range S. of Khotan, that I first began to doubt the E 61 climb, and subsequently was led to investigate the original records and the consequent allusions thereto. Sir Aurel Stein referred to the fact that his surveys of 1900 and 1906-8 had proved the Yurung-kāsh course to lie S. of E 61, and that consequently, if Johnson had climbed E 61, he must have crossed this large river; whereas his published map shows the course of the river entirely to the N. and N.W., and nowhere to the S. of the peak. Serious discrepancies between Johnson's map and the actual topography near the headwaters of this, the main feeder of the Khotan River, had been already noted in Stein's first account of his explorations.⁴ Knowing in what high esteem Johnson's work in Kashmir had been held by his distinguished superiors, Montgomerie and Robinson, I could not conceive it possible that an experienced triangulator, as Johnson undoubtedly was, could to the extent indicated mistake the position of a peak actually climbed by him, and I refused to admit the possibility of an intentional falsehood. Stein, in conversation, considered it an 'historical puzzle, which can only be solved by a reference to original documents'; and I, believing in Johnson's capabilities and honesty, determined to attempt the solution of the riddle.

The investigation has proved extremely interesting, and leaves no doubt in my mind that E 61 was not climbed. At the same time it appears that when Johnson claimed the ascent, he did so under a *bona-fide* but mistaken belief that he climbed it; his honesty in this respect is therefore vindicated, but the record should not stand. The statement that he climbed E 61 is contained in his report submitted to Colonel J. T. Walker, Superintendent, Great Trigonometrical Survey of India, dated April 22, 1866; and is reprinted in his paper communicated

³ *A.J.* xxiv. 133.

⁴ *Sand-buried Ruins of Khotan*, 2nd edition, p. 198.

to the R.G.S.⁵ 'I ascended three peaks of the Kuen Lun range which had been previously fixed by the trigonometrical operations of the Survey . . . E 57, E 58, E 61; the contrast between the view to the north and that to the south was very striking; on the one side there was little but plain, on the other mountains and deep valleys.'

That the climb was admitted, at least by some members of the Survey of India, is evidenced by a note by Mr. J. B. N. Hennessey, F.R.S., Officer in Charge, Computing Office, Dehra Dun, who, after repeating Mr. Johnson's claim, adds⁶: 'Besides, his plane-table is marked by dotted lines indicating routes actually travelled over leading up to Nos. 1, 2, and 5 (E 57, E 58, and E 61), while red circles on the summits show that he set up his plane-table there; but no further allusion whatever is made to these ascents, which would have been arduous beyond all precedent . . . and though all these heights were determined three years prior to the ascents, only the lesser heights, those of Nos. 1 and 2 (E 57 and E 58), are given on Mr. Johnson's plane-table, while the greater, that of No. 5 (E 61) is omitted.' Mr. Hennessey concluded that the height which had only been fixed from a single observation was probably in excess of its actual value.

That Colonel J. T. Walker did not agree entirely with Mr. Hennessey is shown later in a letter to Mr. Freshfield, dated July 22, 1884, where he alluded to the 'suppressed ascent' in these terms: 'What I suppressed was not the height itself . . . but Mr. Peyton's statement that Johnson had ascended to the great height of 23,890 feet.'

My first clue to the solution of Stein's historical puzzle was found in the records of Pandit Kishen Singh's route traverse from Karghalik to Leh *via* Khotan, on his return from Forsyth's second Yarkand mission, 1873-74. In Trotter's report of this journey I found the statement:

'I may further add that I have been in communication with Mr. Johnson⁷ on the subject, and that he freely admits the possibility of a large error in his longitude of Khotan. He states that in commencing his reconnaissance from the Kuen Lun mountains (which he carried on with the plane-table only) one of his three trigonometrically fixed points, on which his work was

⁵ *Journal of the Royal Geographical Society*, vol. xxxvii. 1867.

⁶ *Synoptical Volume VII., Survey of India*, pp. xl-c (footnote).

⁷ This was nearly ten years after Mr. Johnson left the Survey of India.

based, turned out subsequently to have been incorrectly plotted on his board.' ⁸

There were at that time only three fixed points in this area, viz. E 57, E 58, and E 61 ; one of these turned out *subsequently* to be incorrectly plotted on his board ; presumably, then, Johnson climbed at or near the positions which were actually represented on his plane-table, for he had nothing else from which he could test his identification. Which, then, was the wrongly plotted peak ; and was there actually a peak at or near the position plotted ? In Mr. Hennessey's mind there was something doubtful about the height of the E 61 which he assumed was climbed. He does not mention the error in plotting, but thinks the peak was about a thousand feet lower than 28,890. In Colonel Walker's opinion there existed a doubt that E 61 had been climbed.

My next efforts naturally lay in trying to find the original plane-table sketches ; I have so far been unsuccessful, and have only been able to examine the map that was made from them. To my disappointment I found all three points correctly plotted. I then searched the records of the controversy between Johnson and Colonel Walker and their respective letters to the Government of India ⁹ ; I quote below from Colonel Walker's letter to the Secretary to the Government of India, in the Home Department, dated January 24, 1867. 'His (Johnson's) report would have been ridiculed . . . had it been published as it came from his pen. His map would have done more harm than good to the cause of Geography, for it placed Ilchi in latitude $37^{\circ} 42'$, or about 40 miles north of its true latitude, $37^{\circ} 7' 35''$, as determined in this office from his astronomical observations and subsequently verified by the plane-tabling *when the mistakes of his original projection were rectified*. . . . I sat him down by my side and extracted out of him the information of real value which he had managed to pick up during his travels, but had not given in his report. . . . I showed him how to correct his map. . . . I gave him full credit for both (report and map), more credit than he deserved, *for I said nothing about his original mistakes and inaccuracies*, and I solicited for him a pecuniary reward commensurate with the perils he had incurred, the anxieties and privations

* Trotter, *Account of Pandit Kishen Singh's Explorations in Western Tibet*. Reprinted in *Records of Survey of India*, vol. viii. part i. p. 151.

⁹ These papers I have listed at the end.

he had suffered, and the value of the information he had submitted. . . .

Here, again, we have allusion to the mistake in the plotting of Johnson's plane-table and the errors introduced into his subsequent work, caused by the faulty position of at least one of his initial points. We may also surmise that it was the suppression of the mistakes that led to confusion afterwards when Trotter tried to recompile the map.

Johnson's remark in a letter to Colonel Walker, dated January 16, 1867, also refers to this same unfortunate error in projection that led to the entire distortion of this map. 'The inaccuracy in the projection of the G.T. Station alluded to by you was caused by the *latitude* having been wrongly inserted in the synopsis . . . and was clearly explained to you when the error was discovered.'

From a perusal of this correspondence I have concluded that the published map was quite unlike the original plane-table sketch, and was really a compilation based on the correct positions of the points.¹⁰ It is perfectly evident, from a comparison of the published map and Trotter's attempted revision after Khotan had been correctly fixed by K'ishen Singh, that there is in the latter map still a portion left only partly adjusted. Now, however, we know, from Sir Aurel Stein's surveys in 1906-8, the correct topography of the neighbourhood.¹¹ Trotter, from Kishen Singh's report, surmised that the source of the Yurung-kāsh was many miles E. of the position assigned to it by Johnson¹²; but as Johnson's map indicated that the three peaks, E 57, E 58, and E 61, stated to have been climbed by him, were on one continuous range, he was unwilling to show the river as piercing that range. Sir Aurel Stein's surveys now show Kishen Singh's report and Trotter's surmise to have been correct. The Yurung-kāsh cuts a gorge, S. and S.W. of E 61, over 18,000 ft. deep, and Johnson must have crossed it if he ascended the peak 5 miles to its N.

It is difficult to believe that Johnson descended into this

¹⁰ The map published in the *Journal of the R.G.S.*, vol. xxxvii. p. 1, is in accordance with the revised map, and therefore not with the original sketch.

¹¹ Map published in *Ruins of Desert Cathay*, vol. ii., from surveys of Ram Singh and Lal Singh.

¹² Trotter, *op. cit.*, referring to the true source of the Yurung-kāsh as mentioned by Kishen Singh, first footnote, p. 150.

gorge and climbed thence to the summit of a peak 28,890 ft. above the sea, finally returning to the Kara-kāsh. Had he done so, he surely would not have classed this feat with two other lesser climbs. It is true that he does not specifically state on which side of the summit 'there was little but plain,' or whether the mountains and deep valleys lay to the N. or S. of him. But if he had climbed the real E 61, mountains and deep valleys would have been on *both* sides.¹³

Yet another examination of Johnson's published map (with E 61 correctly plotted) shows marked resemblance between the topography and form of the range between E 57, E 58, and E 61 and that shown on Stein's map between E 57, E 58, and Zokputaran (Pk. 2/61A). The valley to the N. on Johnson's map corresponds with the Chomsha Valley of Stein, which the former would have seen from the summits of E 57 and E 58, and also on his descent from the Yangi-dawān. There is but one point in the evidence that is not absolutely clear. Johnson only mentions a fault in latitude; it would be expected, therefore, that the peak climbed would have the same longitude as E 61, whereas Stein's Zokputaran is shown some 10 miles to the W. of this meridian; at the same time, if the point plotted was due S. of E 61, and the summit reached was Zokputaran, plane-table rays to E 57 and E 58, being almost in a line with and due W. of it, would not show up the discrepancy in longitude. In my own mind I feel absolutely convinced that, should Johnson's original plane-table ever be forthcoming and examined, it will be found that the incorrectly plotted point, climbed by Johnson, will be in the close neighbourhood of Zokputaran (22,639 ft.).

The climbing of this peak, judging from Stein's panoramas and from its situation, does not look difficult¹⁴; it lies on the same range as E 57 and E 58; its height is about 1,000 ft. lower than that of E 61; at its summit there would have been 'little but plain' to the S., while to the N., unrecognised by Johnson, lay the deep valley of the Yurung-kāsh and the real E 61. How much blame is to be attached to Johnson for starting out with a faulty plane-table is doubtful. He maintained afterwards that the synopsis of points given him was incorrect, and that therefore the fault was not his. Never-

¹³ Vide panorama 1A and 1B, Stein's *Mountain Panoramas from the Pamirs and Kuen-Lun*.

¹⁴ E 61 would be a very difficult peak to climb from the Yurung-kāsh gorge.

theless, the conclusion I have come to is definite ; that, though Johnson honestly thought he had climbed E 61, it is evident and certain that he was not even on the range that contains it ; at the same time it is highly probable that Zokputaran (Pk. 2/61A) was the actual peak climbed.

There is one other point worth mentioning that is the outcome of this investigation. The opinion has been sometimes expressed, and was recently repeated by the President of the Alpine Club, to the effect that ' the Indian Government valued Mr. Johnson's services so low that they reprimanded him for being too zealous in his mountaineering and he left the service.' I think that this statement should be challenged, and I feel certain that the President would not wish to press the point after examination of the documents. I have no wish to dig up the past or to belittle Mr. Johnson's work, but details of the whole controversy, curious to relate, were actually published by Government at the time, and are still available in the records of the Survey of India. There is no doubt that Johnson was an experienced and courageous mountaineer, but he appears to have been a better triangulator than topographer. In the former capacity he had in a single season (1862) observed with a theodolite from no fewer than seven stations over 20,000 ft. ; while in the previous year he had observed from two of that altitude. In a former season (1854) he had succeeded in making the very difficult triangulation connection between the Sutlej and the head of the Bhāgirāthi over the main Himalaya, after the failure of two other Survey of India detachments. Both Montgomerie and Robinson, under whom he served prior to 1865, held high opinions of him, and he rose rapidly in the department. In 1864 Johnson suggested to Colonel Robinson, who was officiating in charge of the G.T.S., that he should ' attempt a scientific exploration into the wilds of Central Asia.' The letter was forwarded to Government, but the expedition was not recommended, owing to the recent murder of Schlagintweit at Yārkand, and possible complications. Johnson knew his request was about to be refused, but after secretly and deliberately borrowing money for the enterprise, he made his journey to Khotan and back.

So long as he was away he was supported by Colonel Walker and the Government of India. But on his return some cognisance had to be taken of the breach of discipline, and he incurred a very slight reprimand in these words : ' Mr. Johnson ought not to have gone beyond the British boundary without the permission of the Government of India.'

Johnson, who had anticipated admiration and reward,¹⁵ seems to have lost his head at this mild rebuke, and in a series of illogical, confused, and contradictory letters, claimed 'to have been abandoned by the head of his department.' Extracts from Colonel Walker's reply have already been quoted, which show that, far from abandoning him, Colonel Walker gave him great technical assistance and made no mention of his mistakes until forced to do so. In addition to the ordinary bills of the expedition, Government paid Mr. Johnson's private debts, amounting to 16,400 rupees (a very considerable sum in those days), incurred in connection with the journey, though these liabilities were unsupported by any vouchers.

There is nothing whatever in Government's or Colonel Walker's published views to show that Johnson's services were underrated, and a gentle reprimand was the least possible notice that could be taken of his serious breach of discipline.

Johnson, who had obtained a post under the Maharajah of Kashmir on a salary of Rs.1500 *per mensem*, resigned his appointment in the Survey of India, where his pay had, on reorganization and after his Khotan journey, been raised to Rs.500. Furthermore, it was Colonel Walker's opinion that the higher salary of Johnson's new post was the real reason of his resignation, and in accepting it Government offered to allow Johnson to rejoin the Survey of India should he wish to reconsider his decision. The Government of India appears to have acted very leniently and liberally in the case, and it is gratifying to know that Mr. Johnson was afterwards on quite good terms with many Government of India and Survey of India officials; and Sir Douglas Forsyth and Captain Trotter were among the first to acknowledge the assistance received from him as Governor of Ladākh.

Note.—The following letters and papers have been consulted :

1. From Under-Secretary to the Government of India to Colonel J. T. Walker, Superintendent, Great Trigonometrical Survey, No. 1982, dated 16.9.1865.
2. From Colonel J. T. Walker, Supdt. G.T.S., to Home Secretary, Government of India, No. 59/537, dated 27.9.1865.
3. From Mr. W. H. Johnson to Colonel J. T. Walker, Supdt. G.T.S., No. 102, dated 22.2.1866.

¹⁵ He 'solicited H.E. the Viceroy to confer on him such a pension as would enable him to live in comparative comfort for the rest of his life.'

4. From Mr. W. H. Johnson to Colonel J. T. Walker, dated 16.1.1867.
5. From Mr. W. H. Johnson to Home Department of Government of India, dated 23.1.1867.
6. Proceedings of Government of India, Home Department, 24.1.1867.
7. From Colonel J. T. Walker to Home Secretary, Government of India, dated 24.1.1867.
8. From Colonel J. T. Walker to Home Secretary, Government of India, No. 12/63, dated 11.2.1867.
9. Government of India (Home Secretary) to Colonel Walker, No. 2142, dated 1.3.1867.

JOHNSON'S MAP AND THE TOPOGRAPHY OF THE K'UN-LUN,
SOUTH OF KHOTAN.

A SUPPLEMENTARY NOTE BY SIR AUREL STEIN.

MAJOR KENNETH MASON'S lucid and interesting paper on 'Johnson's "Suppressed Ascent" of E 61' throws important light on questions which had puzzled me greatly since I first approached that highest and very prominent peak in the K'un-lun range S. of Khotan. I feel hence very grateful for his courtesy in having allowed me to see it in manuscript. The following remarks are intended to explain the view expressed by me in the conversation to which he refers, and to state briefly the reasons upon which it was based.

The surveys which in the autumn of 1900 I was able to effect in that difficult mountain region with the help of Rai Sahib Ram Singh, of the Survey of India, and which have been fully described in the Personal Narrative of my first Central-Asian expedition,¹ had revealed very striking discrepancies between its actual topography and that represented in the 'Map illustrating the routes taken by Mr. Johnson, Civil Assistant, G.T. Survey, in travelling from Leh to Khotan and back in 1865.' A comparison of this map with the record of our surveys, as shown by the map in my Personal Narrative of that journey, or on a more adequate scale by the map published with my Detailed Report on it,² will suffice to illustrate these divergencies at a glance.³

¹ See *Sand-buried Ruins of Khotan* (second edition, 1904), pp. 191-225.

² See *Ancient Khotan* (Clarendon Press, Oxford, 1908), vol. ii.; scale 8 miles to 1 inch.

³ It will be enough to call attention, e.g., to the representation

The puzzle presented by them was not solved by the surveys resumed in 1906, on my second expedition, when with the same old travel companion I succeeded in exploring some of the main tributaries of the Yurung-kāsh (or Khotan) River W. of Peak E 61, or 'Muz-tāgh,' 'the Ice Mountain,' as it is locally known, to their high glacier sources.⁴ Nor was a clue to those manifest errors of the old map furnished by the trying surveys which two years later enabled me, with the devoted help of Rai Bahādur Lāl Singh, of the Survey of India, to explore the high ice-clad ranges around the main headwaters of the river far away to the E., and ultimately to re-trace Johnson's route from the utterly barren high plateaus in the extreme N.W. of Tibet to the close vicinity of his 'Yangi-dawān.'⁵ Evidence, topographical and quasi-archæological at the same time, allowed me with certainty to fix the position of this high glacier pass by which Johnson had effected his adventurous crossing of the main K'un-lun range, even though the unfortunate mountain accident, which cost me the toes of my right foot through frost-bite, prevented my actual ascent to it.

The ease with which Johnson's route S. of the range, as shown in his map, could be recognised here, on the ground surveyed by us, seemed to make it particularly difficult to account for the great divergencies which, as noted above, his map showed from the real topography of the mountain area to the N. And the fact of Johnson having been a trained surveyor of great experience⁶ added still further to the enigma

of the Yurung-kāsh River course, which in Johnson's route map is made to originate close to the triangulated Peak E 57. In reality its line, marked by a deep-cut valley which passes to the S. of Peak E 61, or 'Muz-tāgh,' and which is easily sighted from any high point (as my photo-theodolite panoramas brought back from the surveys of 1901, and published in my *Mountain Panoramas from the Pamirs and Kwen Lun*, Royal Geographical Society, 1908, clearly show), extends some 120 miles to the E.S.E. of that point. Still more puzzling it was at the time to find that the Yurung-kāsh River, which passes in a deep gorge due N. of Karanghu-tāgh, the southernmost inhabited place, appears in that map as flowing past the latter to the S.W., i.e., up the valley of the Kāsh River, a tributary joining the Yurung-kāsh just below Karanghu-tāgh.

⁴ Cf. Stein, *Ruins of Desert Cathay*, vol. i. pp. 179-211.

⁵ See *Ruins of Desert Cathay*, vol. ii. pp. 443-480.

⁶ Johnson's experience was almost entirely as a triangulator. He does not appear to have done much plane-tableing prior to 1864.
—K. M.

presented. What, however, in view of the knowledge gained through our repeated surveys, I could feel quite sure of, was that Johnson's assumed climb of E 61 had no foundation in fact. I did not hesitate to express this conviction to Major Mason, as I had expressed it long before to more than one member of the Alpine Club. But without documentary evidence regarding the character of Johnson's map, the matter did not seem to me ripe for critical discussion in print.

The evidence brought to light by Major Mason's search among the original records of the Great Trigonometrical Survey has fully confirmed that conviction, and I feel all the more gratified by the result of his investigation, because it furnishes also a satisfactory clue in general to the puzzles, already referred to, which the map intended to illustrate Johnson's routes has presented. Not until his original plane-table record is traced will it be possible to see clearly to what extent the strange defects of the map may be attributed to 'adjustment' consequent upon the wrongly plotted position of E 61. But the reasons which had led me to the conviction of this peak not having been climbed are wholly independent of this question, and as I am, I believe, the only European traveller who has visited that mountain region since Johnson, I may be allowed to record them here briefly.

As related in my 'Desert Cathay' we struck, on September 17, 1908, unmistakable traces of Johnson's route from the side of Ladāk a short distance below the pass, which his map shows under the name of *Katāi-diwān* (i.e. *Khitai-dawān*, 'the pass of the Chinese'?). On the next day we followed the old track, marked with abundant cairns, by which Hāji Habībullah, the rebel ruler of Khotan during 1863-66 and Johnson's host, had endeavoured to open up a direct route across the K'un-lun to Leh and India, down into the valley of a small tributary of the Kara-kāsh River.⁸ The streams which feed it come down straight from the snowy main range of the K'un-lun northward, and in two conspicuous peaks rising above its crest line it was easy to recognise the two triangulated points E 57 and E 58,

⁷ See *Ruins of Desert Cathay*, vol. ii. p. 468 sqq.

⁸ For all topographical details referred to, see Sheet No. 22 of the maps recording our surveys of 1906-08, on the scale of 4 miles to 1 inch, as now published in vol. v. of *Serindia*, the detailed report of my second expedition (Clarendon Press, 1921); or Sheet No. 10 of the new atlas of 'Chinese Turkistan and Kansu from surveys made during the explorations of Sir Aurel Stein, 1900-01, 1906-08, 1913-15,' *Survey of India*, scale 1:500,000.

situated within about seven miles of each other, to which Johnson's report refers.

In par. 2 of it he declares to have struck 'one of the principal affluents of the Kára-kásh river' at a point 6 miles W. of E 57, and it is from here that he despatched the Khotan messenger whom he had brought away from Leh, with a letter to Habibullah.⁹ He had to wait here twenty days for the ruler's reply and the necessary help from Karanghu-tāgh, on the other side of the range to reach him. A reference to Johnson's map and the few details recorded in his 'Itinerary from Leh to Khotan,' as attached to his report, leaves no possible doubt about the place of his prolonged halt being identical with the spot, marked by some stone-huts and still known to the Kirghiz on the Kara-kāsh River by the name of Hāji-langar, 'the rest-house of the Hāji, i.e. Habibullah,' where my own camp was pitched on September 17, 1908. It is the first spot where a modest amount of grazing can be found after crossing those inhospitable high Tibetan plateaus, and the experiences recorded in my Personal Narrative make it easy to realise how glad Johnson, too, must have been to reach it.

'While waiting at the Kárakásh,' so his report tells us, 'for a reply to my letter, I employed myself in visiting several peaks, in order to fix sufficient points on the plane-table, for extending the work across the Kiun Lun range, and in taking observations for determining the rate of my watch.'¹⁰ A perusal of the report makes it perfectly certain that the ascents mentioned in the earlier passage quoted by Major Mason, of 'three peaks of the Kiun Lun range, which had been previously fixed by the Trigonometrical operations of the Survey, and which, having no names, are known by us as E 57, E 58, and E 61,' could only have been made from the camp at Hāji-langar. Now, ascents to the first two triangulated peaks were, judging from the nature of the ground as seen by us and the comparatively short distances, well practicable from this point. The elevations in question, 21,750 and 21,960 ft. respectively,¹¹ presented no exceptional difficulties to a hardy and experienced mountaineer, as Johnson had proved himself by plenty of

* Cf. par. 8 of Johnson's report, in his letter No. 162, dated April 22, 1866, to Colonel J. T. Walker, Superintendent, G.T. Survey.

¹⁰ See par. 9 of letter above quoted.

¹¹ According to the revised values furnished by the latest Synoptical Tables of the Trigonometrical Survey.

plucky climbs before, but an ascent from there to E 61 or 'Muz-tāgh' was an absolute physical impossibility.

A look at the maps derived from our surveys suffices to show this. In order to reach even the vicinity of that great peak, conspicuous above all of the Khotan K'un-lun by its mass and grand isolation, Johnson would have been obliged to cross the southern main range of the K'un-lun, to descend the extremely confined, and in their lower portions, according to my information, wholly impassable, gorges of the Chomsha Valley, to cross the Yurung-kāsh River, which during the summer months is utterly unfordable, and then to make a climb of some 14,000 ft. up the great peak on the side where its slopes are the most precipitous. And all this before the local help from the Khotan side, without which even the crossing of the Yangi-dawān would have been impossible for however small a party, could have reached him.

In view of what Major Mason's investigation has shown about the acknowledged mistake in Johnson's plotting of his third peak, obviously E 61, it is now unnecessary to carry this demonstration further. But it may be well to point out that when the advent of emissaries from Hāji Habibullah, no doubt with plenty of hillmen to help, had enabled Johnson to set out across the mountains for Khotan on September 6, 1865, it took him fully five days' hard travel across two difficult glacier passes, and through perhaps even more trying gorges, to reach Karanghu-tāgh, the first permanent settlement in these forbidding mountains.

Where the third peak which Johnson climbed, in the belief caused by erroneous plotting that it was E 61, actually lay is a question which I do not think capable of being argued at present with any chance of critical profit. If the incorrect plotting affected both latitude and longitude of this third triangulated point, we have, of course, nothing whatever to give a clue. If the error was only in latitude, as the remark in Johnson's letter of January 16, 1867, *seems* to imply (it does not exclude one in longitude too), and the longitude was right, I find myself faced by a serious topographical difficulty.

Though the stretch of the main range due S. of Muz-tāgh (E 61) was sighted by us only in 1908, and from a considerable distance to the E., there can be no doubt about its rising here too to ice-clad peaks of considerable height, as suggested by the triangulated heights of Zokputaran Peak (22,689 ft.) to the W., and E 62 (21,250 ft.) to the E. of the meridian of 'Muz-tāgh.' But my knowledge of the ground on the S. of

this part of the range makes it appear to me highly improbable that Johnson could have made an ascent so far away from his camp at Hāji-langar. The succession of elevated plateaus south-westwards over which alone his approach to the range due S. of Muz-tāgh could have lain, proved on my journey in the opposite direction to be absolutely sterile wastes of bare gravel or salt. At least six marches would have been needed to bring Johnson's already hard-tried party to a point from which a peak in that meridian could be climbed. Judging from the serious losses my own transport suffered on this ground, where even drinkable water was very difficult to obtain, I do not think Johnson could have undertaken this trip, involving about a fortnight's trying work. But it is perhaps needless to say more on this point, since neither his itinerary nor his map show any trace of such an eastward excursion.

Considering the place in which these notes are likely to find a record. I may be allowed to add a few brief remarks of a more general character. In the first place, I wish to offer a tribute of respect to the feat of pluck and perseverance which Johnson performed in making his way to Khotan across ground of such exceptional difficulty as the K'un-lun S. of Khotan. Whatever may be thought of his mapping there or on the ground to the N., there can be no question of the journey having been a pioneer enterprise of true merit, deserving of a better sequel. That the results failed to realise the promise which such an achievement would have justified, seems tragic in more than one sense.

My other desire is to call attention, however briefly, to the special interest which the orography of the K'un-lun presents, just in the portion where Johnson succeeded in crossing it. Though my two attempts at tracing his route have in the inverse direction failed, largely owing to tenacious local obstruction, our surveys have furnished adequate evidence of the fact that close to the 'Yangi-dawān' there lies the point where two main ranges of the K'un-lun diverge. As Map II. reproduced in my 'Desert Cathay' clearly illustrates, we have there, apparently in the peak for which our triangulation of 1900 showed a height of 28,071 ft., the meeting point of the high snowy range overlooking the Yurung-kāsh headwaters from the S. with the almost equally imposing mountain rampart which extends to the N. of the latter and forms part of the mighty rim enclosing the Tārīm Basin. Muz-tāgh, or E 61, is the culminating point of this northernmost K'un-lun chain.

It is an orographically very notable fact, that immediately on the W. flank of that dominating mountain *massif* the Yurung-kāsh has cut its way through the range in a succession of formidable gorges, which I was able only to approach in 1900 and which still await their explorer.

Muz-tāgh, I trust, will be climbed some day, and the grand panorama which its top is bound to offer will prove hard to beat anywhere N. of the Himalaya. But the ascent will lie from the broad plateaus on the N.—and remembering my experiences with the wily hillmen of Karanghu-tāgh, mostly exiled criminals and their stock, I much doubt whether it will be accomplished without the help of sturdy mountaineers from the far-away valleys of the Indus or Oxus.

RECOLLECTIONS OF THE ENGADINE IN 1872.

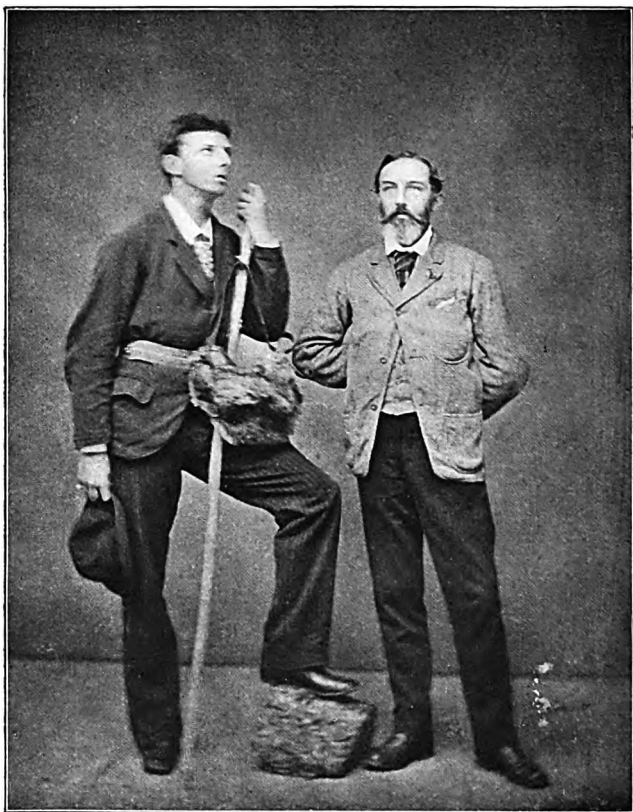
ASCENTS OF PIZ BERNINA, PIZ MORTERATSCH, PIZ ROSEG. TOUR OF MONTE DELLA DISGRAZIA, AND ASCENT OF PIZZO DI VERONA BY A NEW ROUTE AND ALONE.

BY SIR J. H. RAMSAY, BT., OF BAMFF, LL.D., LITT.D.

PLEASANT were the times at Pontresina in 1872; and pleasant was the company to be found at the Krone Hotel. Almost all the folk were English, but there was a German contingent in the house. We had not been at war with Germany in those days; but we differed from the Germans, among other things, in the important question of the ventilation of the *salle-à-manger*. But our majority was overwhelming, and we could carry matters our own way. In fact, one evening I felt rather ashamed at finding the only real public room in the house usurped as a committee room, for the discussion of a matter concerning the English, and the English alone. These lordly ways render our countrymen unpopular on the Continent.

The chaplain—I am sorry that I have not recorded his name—was a sociable man, with musical tastes, and contributed to the genial atmosphere; he was very successful in arranging vocal entertainments by the ladies in the evenings, especially on Sundays.

My first expedition was a rush up Piz Corvatsch, along with that charming man, Sidney Harrison, brother of Frederic Harrison, the well-known writer. I had also with me my old friend, A. C. Vesey, of Christchurch, Oxford, and the



SIR JAMES H. RAMSAY.

F. MARION CRAWFORD.

Audit Office, London, and my brother, G. G. Ramsay. The ascent was easy, but the lagging posse of guides allowed us to get up three quarters of an hour before them. Three delightful hours we spent on the summit, with Piz Roseg towering in front of us, and the Roseg and Tschierva Glaciers spread at our feet. Our return was varied by a circuit of the Roseg Glacier, involving some glissading, tumbling, and fun.

The ascent of the Bernina was a primary undertaking not to be delayed, the weather being perfect. But though guides for the Corvatsch had been plentiful, I could find no man free for the Bernina. But I heard that there was a youthful aspirant to mountaineering honours who had a guide ready to take him up. I made haste to make his acquaintance, and found him to be Marion Crawford, destined later to achieve fame in the world of letters as a writer of fiction. He was quite prepared to allow me to join him and his man, Johann Gross. Our slender preparations were soon made, and we arranged to sleep at the Boval Hut, at the side of the Morteratsch Glacier, the usual starting-place for the Bernina.

On August 21 we started from the hut at 1.15 A.M., with a glorious moon, just past the full. The snowy peaks shone in her light. All went easily at the first; then came some cutting of steps on the glacier till we came to the ice-fall, and then the worthy Johann declared himself unprepared to take us any farther. This was intolerable. Of course I could not rest there; so, leaving my young friend and his guide comfortably established in a safe place, I went on to prospect. An hour and a half I toiled, searching for a passage through the séracs. At last I found a sufficient way out. Between the ice-walls of a huge overhanging sérac an upturned slab of ice, with a level top, about 2 ft. wide, adhering to the wall on our right hand, offered a ledge along which, keeping close to the wall, and looking away from the gulf on our left, we got easily through. But the guide was afraid to raise his voice or speak loud. At last we were clear of the glacier, and got on to rocks and snow. The ascent is not very steep, but we were glad to find steps ready cut. We reached the summit (snow, or ice covered with snow) at 9.25 A.M., 8 hours and 20 minutes from the Boval Hut. An hour and a half had been lost in the ice-fall. Mists interfered with our view, but the scenery on the way up was splendid. We left the top at 11.15, and made our way homewards by the Bella Vista and Munt Pers. A trap, waiting

on the road below at 6 p.m., brought us home in comfort, after a very successful day.

Next day Crawford and I had to be photographed.

Bad weather followed, and for three days occupation had to be found indoors. On the 25th, the weather having cleared, I was able to ascend the delightful Piz Languard, studded with gentians, and enjoyed the panorama covered with new-fallen snow. The distant peaks in sight included the Orteler, the Monte Cristallo, and Monte Rosa. With this ascent I am tempted to couple an incident that occurred, in fact, a year later. Coming down from the top I was met half way by a friend, the brilliant Welshman, Osborne Morgan, M.P. for a Welsh constituency. He invited me to repeat the ascent and share his luncheon. The offer was too good to be refused; and a very jolly time we spent on the top. A sage dictum enunciated by Morgan I have treasured ever since, namely, that whereas Aristotle lays it down that we cannot pronounce a man's life a happy one till he is dead, so no man should pronounce an hotel a good one till he has seen the bill.

J. O. Maund and J. H. Peebles were at the Krone at the time; we watched with interest their preparations for an attack on the unconquered saddle between the Bernina and the Roseg, and wished them all success. Two days later we were grieved to hear of their failure. I cannot say that we were consoled by learning, shortly afterwards, that Dr. Güssfeldt had won imperishable fame, and stamped his name on the geography of Europe, by accomplishing the feat. We heard that the judicious mountaineer had rested quietly below while the steps were being cut, and then, when they had all been made ready, marched up in triumph. But I do not vouch for this as a fact.

Broken weather again gave some days of enforced rest, but on August 26 we started for the grand tour of the Monte della Disgrazia.

The party consisted of Sidney Harrison, Major Rice, J. H. Fox, my brother, and myself. We sallied out at 8.45 in heavy marching order, with knapsacks, under the charge of the estimable Peter Jenny, best of Pontresina guides, supported by J. A. Dermont. Ascending the left bank of the Roseg Glacier, we reached the col between Il Chapütschin and La Sella [La Mongia]. A ticklish descent of an hour and a half down rocks and snow landed us on the Fex Glacier; two hours of snow then led us to the foot of the Tremoggia

Col, a second barrier of rocks and snow to be crossed in order to reach the Scerscen Glacier, a grand snow basin with many affluents, and surrounded by a range of precipices worthy of comparison with Chamonix aiguilles. But yet a third col, the Forcella d'Entova, had to be surmounted to escape from the Scerscen snows, and refresh our weary eyes with the sight of the delicious green slopes of the Entova Alp. Down in the depths at our feet we peered into the Val Malenco, with Primolo and the church tower of Chiesa gleaming with sunshine and atmospheric tints, while the cliffs of the Disgrazia towered on our right. Headlong for four hours we rattled down; a pause, however, at a chalet regaled us with copious draughts of milk—of all things the most grateful after an ascent. Finally, at 7.45, the welcome inn at Chiesa was reached.

Next day rain—for me providential rain—gave a day of rest that I could not have dispensed with if I was to keep going. In fact, comparatively early on the previous day, through unpardonable obstinacy on my part, I had had a fall—a fall of some 15 ft.—into a crevasse. I had resisted roping as not being yet needed, and was walking along ahead of the others; halting, foolishly, on coming to the brink of a snowy crevasse, a treacherous cornice gave way under me. Down I went, but fortunately standing upright, and so landed on my feet, on a level floor in the ice. My friends behind had an awful shock when, looking around, I was nowhere to be seen. I had vanished. As a clue to where I was entombed they had to search for my footprints in the snow. In the ice cave into which I had fallen an ice spur or stalagmite at one end enabled me to cut steps half-way up, and then the rope came to the rescue. But I was a good deal bruised and shaken, to say the least of it. My spectacles were broken, and my nose bled for two days.

Major Rice and Harrison parted from us at Chiesa, but Fox, my brother, and myself held on. For our further progress, with two nights of camping out in prospect, extra portorage was needed. We applied to mine host, who at once produced a worthy man who, with the help of his daughters—as it turned out—undertook to carry all that we wanted. But I was sorry to see the wages pocketed, not by the porters, but by the landlord, who said that the money was due to him. Clearly a case for *pourboire*.

On August 28 we resumed our march. Eking out my scanty notes with the Swiss Ordnance Map, I gather that we

must have taken the high road from Chiesa to Torre, and then proceeded to ascend the Torre Valley. The path was steep, but, taken at a lounging pace, not at all trying; we had a variety of beautiful scenery all the way up to the Alp Airale, four hours' ascent. From this alp we had three hours of rugged rocks to gain the top of our ridge—the ridge that runs down due S. from the Disgrazia [Passo di Corna Rossa]. One more hour brought us down to our resting-place at the Alp Preda Rossa, another primitive little settlement, at the head of the Val di Sasso Bissolo. For the night we found tolerable quarters in a hay-loft above the cows.

On August 29, at 4.45 A.M., we left Preda Rossa to cross another spur that runs down from the Disgrazia slightly to the W. of S. Easy snow-slopes at first; half-way up we had a splendid view of Monte Rosa. By 10 A.M. we reached an arête of interesting rocks mingled with snow, which brought us to the top by 12.30 noon [Bocc. di Remolussa]. The view was somewhat clouded, but the Bernina and Disgrazia showed to magnificent effect.

Our next move was a drop—and such a drop it was!—down to Alp Pioda, in the Valle di Mello, the most awful-looking abyss that ever I looked down into. I felt tempted to ask, 'Are there any inhabitants there?' Inhabitants, however, there were and to spare, and the difficulty was how to house them. A hut there was (Alp Cameraccio), about 15 ft. by 12 ft., only roofed at one end. Six men had established themselves therein, when more men turned up. The only further accommodation offered to us was a wooden box or coffer with a hinged lid, within which two men could be packed, to rest on very doubtful rags of bedding. This was allotted to Fox and myself. My brother proposed to camp out, ensconced in a great 'ulster,' which he had forced the reluctant guides to bring up. Our supper we took in the open air in mild temperature, though little below snow-level.

On August 30, about 3 A.M., the lid of the box was raised, to my great relief; Fox, I think, had got rid of it earlier. Still earlier had my brother been routed out of his ulster by inquisitive pigs. But the lazy guides did not make a start till about 4. Mists enshrouded us at first, but in about three hours' time we reached the top of the Monte Sissone, an arm of the Disgrazia that runs in a north-westerly direction towards the Forno Glacier. Immediately in front of us rose in sharpest array the aiguilles and pinnacles of the Torrone summits. But the outlook to the S.W. was enchanting

and never to be forgotten. I see it as clearly now as fifty years ago. Over a placid sea of mist, on the one hand Mont Blanc, and on the other hand Monte Rosa, rose like islands; the whole of the Mischabel range, and the entire Oberland, lay equally before us, not to speak of nearer friends, such as the Bernina and Roseg.

From the Sissone we descended to the Forno Glacier—steepish going at first, then very easy; no proper moraine; no ice-fall; hardly any crevasses; but on either hand a splendid amphitheatre of peaks, too numerous to be recorded here. At 2 p.m. we reached Maloja and took a carriage to Silvaplana; there we found all our friends waiting to welcome us and conduct us back in triumph to Pontresina, after our successful and interesting excursion. Very brown the slopes of the Engadine looked, after the verdure of the Italian valleys.

Reports of my fall into a crevasse having been noised abroad, divers youths came forward to tell of similar mishaps that had befallen them, with interchanges of interesting notes, as to circumstances, depths fallen, etc. My brother took the wind out of their sails by asserting with professorial gravity that he, personally, never fell into any crevasse less than 50 ft. in depth.

Sated with three days' rest, the indefatigable Fox pressed me to join him in an ascent of the Piz Morteratsch. It bore a bad name for avalanches, and falls into crevasses, and had no special attraction for me. But I gave way on condition that he would not ask me to 'do' the Roseg as well.

Starting at 4.15 a.m. on September 4, we took a bergwagen to the Misaum Chalet in the Roseg Valley, and breakfasted there off hot milk. At 6.30 we began our ascent, going steadily, but at a lounging pace, up the moraine of the Tschierva Glacier, so much so that I thought that Jenny was 'shutting up.' But he went better when we came to the rocks and stiffer work. Splendid views of snow and ice-falls all around us. At the top of the rocks we had our luncheon. From that point we had deep snow, first across a glacier basin to the foot of the final ridge, and thence in a diagonal traverse across the face of the ridge up to the top. We made our descent by the Morteratsch Glacier, the ticklish part of the day. Jenny pointed out to me where once, to save his 'Herr' from being carried down by an avalanche, he had thrown himself into a crevasse. His body was so bruised by the rope that he felt it for six weeks.

By 6.30 p.m. we had returned to the Krone. We had not

fallen into any crevasse, or been swept away by an avalanche, but the ascent could not be pronounced free from danger.

After one day of rest, Fox, in spite of our supposed agreement, was pressing me to join him in an attack on the Piz Roseg, the most arduous of Engadine ascents. To overcome my reluctance he brought Mrs. Fox to bear on me, and so I had to consent. The weather, no doubt, was perfect, changeable though it had been.

At that time I was a widower, and I had my mother and three girls of five, seven, and nine years of age travelling with me. On September 6 I took my children in a bergwagen, a rough, jolting vehicle, up to the Roseg Restauration, and then sent them home under the charge of Mrs. Fox. At sunset I saw the most thoroughly rosy glow on the Piz that I have yet seen.

The ascent proved a long day's work from dark to dark. Leaving the Restauration at 2.30 A.M., we began with stumbling in the dark over stones on the most slippery ice that ever I encountered—moraine, of course. After five hours' going, at 7.30 we reached the Aguagliouls rocks dividing the Roseg and Tschierva Glaciers, and breakfasted. There the first dawn broke in upon us, with sunrise following in successive gradations of glory; altogether one of the finest displays of colour that I ever beheld. The light on the Piz Corvatsch was a special feature.

A rock ascent of three and a half hours ensued, ending with a traverse of a couloir of rock and ice, when I experienced a thrilling incident not easily forgotten. We were walking round the semicircular face of the couloir, with our right hands to the wall; the guides were in front, Fox in the middle, and I behind him. He must have had a substantial hold of something with his right hand, because suddenly, his left foot slipping, to my horror I saw him swing outwards on his right foot, just like a door on its hinge, with his left arm and left leg hanging over the abyss. A prompt pull on the rope by the guide in front swung him round into position, and I could breathe again.

The first peak tolerably steep, and steeper than it seemed to be as seen from below, proved to be of pure snow. Pausing at the foot of the arête of the second peak, on the N.E. side to our left we looked down upon a marvellously steep slope of unbroken snow sweeping down to the Tschierva Glacier. Not a particle was there of rock or dirt to mar the shining surface. I never saw the like of it. I could not help thinking

what a magnificent glissade it would offer if the thing were at all possible !

The second peak, again, did not prove so bad as it looked from below. There were bits of rock jutting through the snow, which was softish, but in fair condition. Forty-five minutes brought us from the top of the first peak to the top of the second peak, which we reached about 1.14 p.m., in 11 hours from the chalet, with only two real halts.

The third or final top we found to present the thinnest of snow ridges. The view from the top was not remarkable, in fact, disappointing. We were really too crowded among the tops for effect. The descent of the rocks took us two hours and a half, the ascent having taken three hours and a half. At 8 p.m. we reached the Restauration, after dark, having started two hours before sunrise, as I said before ; 16½ hours of walking we had done. If not the most dangerous, certainly the most trying part of the day was the drive home in the dark in the bergwagen, shaking one's stiff bones and back to pieces. About 9.30 we reached the Krone, after a fine excursion, but not an easy one. I felt hardly able to wash or dress !

Young as they were, my girls had their Alpine aspirations, destined to be more fully satisfied at Chamonix and Zermatt in later years. But for the time their ambition was limited to the picking of edelweiss, and a walk on a glacier. The latter wish was the easiest to gratify, the Morteratsch Glacier not being farther than a mile from the town. Strolling down we found E. and H. Buxton, with their wives and children and their sister Miss Buxton, by the ice. Hearing that I was preparing to take my children for a trip across the glacier, they asked if I would take charge of their children, and of little Miss Fox also, which I readily agreed to do, and the spectators had the diversion of seeing eight children solemnly roped to a man for an expedition over the smoothest part of the glacier.

The edelweiss gave more trouble. I took my girls about a mile up the Roseg Valley, and up a stony slope, where I expected to find the flower. Finding none, I deposited my chicks on a jutting rock, fit for a heron's nest, and told them not to stir till I came back. Leaving them to enjoy the sense of their situation, I prospected till I found the desired plant and brought them to the place ; but the youngest girl had to be held up to reach her flower.

Another casual visitor at Pontresina at this time, not to

be forgotten, was Craufurd Grove. He very kindly presented me with an ice-axe, which served me in good stead not long after, and which I still preserve.

On September 12, being bound for the Italian Lakes, we said good-bye, very, very reluctantly, to the bare brown Engadine, the weather being perfect and the slopes enriched with the brilliant tints of the autumnal blackberry leaves. But our hosts seemed to think that they had seen enough of us, and that we ought to make way for local winter festivities. At 8.30 A.M. we took the diligence to Poschiavo, with splendid views of the Bellavista and Piz Cambrena on the way. Marvellous were the zigzags that we swung round; near La Rosa the road seemed scattered over the two sides of the valley. Reaching Poschiavo we revelled in the soft luxurious atmosphere, so different from that of the keen bracing Pontresina. We resolved to make a halt in this tempting locality, and took up our quarters at the little inn of Le Prese, in a pretty situation at the head of the Lake of Poschiavo.

On our way down my eye could not fail to catch the beautiful snowy top of the Pizzo di Verona and the Cornicello ridge that faced us from the E. side of the mountain; this seemed to offer an eligible line of attack. Making inquiries as to the usual line of ascent of the Verona Peak, I heard that it involved the crossing of considerable snow-slopes, a route not to be thought of by one prepared to go alone, so I fell back on the Cornicello ridge.

On September 14 I started about 4.30 A.M. Meeting some chasseurs they advised me to abandon my plan and turn up the Val Orsé, so as to attack the peak from the S. and not from the N. Accordingly, I went up the Val Orsé, nearly to its head, and breakfasted there. I cannot remember why I changed my mind; I must suppose that on nearer acquaintance I disliked the appearance of the rocks ahead of me and resolved to adhere to the Cornicello ridge, though it involved loss of time and a circuitous route. About 8 A.M. I reached the stony slopes at the foot of the ridge; the arête was not steep, but the rocks were very loose stuff. However, I clung to the ridge as long as I could, but at last was forced to take to the N. face of the slope, and make a traverse along it.

I must confess that I was somewhat taken aback by finding myself shortly confronted by a hanging glacier of the purest blue ice, with, of course, a yawning 'schrund' below. However, there was no help for it, so I set to work with my axe

(the axe that Craufurd Grove had given me). I did not scamp my job; shutting my eyes to the gulf on my right, I hewed out each step, so as to give standing room for both feet while cutting the next step. I worked in a diagonal direction upwards and to the left, but the inclination was so steep that I could only use my right hand, steadying myself with my left hand against the ice-wall. It seemed as if I would never reach *terra firma* on the other side, but at last I did reach it, rocks at first, and then snow. A long crevasse extended itself before me and seemed to bar my way, but the kindly tracks of a chamois pointed out the place for crossing. About 1.30 I found myself at the top, and sat down to enjoy a delightful rest in 'splendid isolation,' with water at hand. I had got up all right, and was bound to get down somehow. The weather was perfect, and the air warm on the top. The descent presented no difficulty. I reached Le Prese at 6 p.m. In my five and a half hours I had covered 8,125 ft. of ascent, 900 ft. more than the height of the Bernina from its chalet. Allowing half an hour for the step-cutting, that would make 1,600 ft. of ascent per hour. Climbing without rope and without companions, one can go as one pleases.

The final peak struck me as rather like the third Roseg peak, but not so thin or so steep.¹

In 1865 the first recorded ascent of the Pizzo di Verona had been made by the indefatigable F. F. Tuckett, D. W. Freshfield, and H. E. Buxton, with F. Devouassoud, P. Michel, and Walther of Pontresina. Having come from Pontresina by the Bernina Pass, they slept at the Palü chalets. Sweeping round the slopes of the Palü Glacier, they attacked the summit from its western arête.² I attacked it from the eastern arête, without one yard in common to the two routes.

From Le Prese we moved on to Cadenabbia for peaceful enjoyment of delightful surroundings, returning to Scotland in November.

¹ A cairn was found on the summit.

² *A.J.* ii. 136.

A TRAVERSE OF THE TÄSCHHORN OVER THE S.E. AND N. ARÊTES,
WITH DESCENT BY THE DOMJOCH.

By O. K. WILLIAMSON, M.D.

BEFORE describing a fine expedition by a combination of routes which was made by my party in 1920, a few words of historical reference will be in place.

The Domjoch (4,286 m. = 14,062 ft.) was first crossed by Messrs. G. E. Foster and Horace Walker, with the guides Jacob Anderegg and Hans Baumann, on July 20, 1869 (*A.J.* i. 180; iv. 369). In his paper Mr. Foster thus describes the descent from the col on the Randa side: 'Turning down the steep wall, we descended in that hideous backward fashion, now kicking and now cutting steps, then climbing down crumbling rocks, which soon forced us again on to the snow. Hour after hour passed by, and we seemed no further from the ridge, no nearer to the glacier. . . . At length we reached a gulley, enlivened by falling stones and ice, leading to the glacier below. Towards the bottom the snow was thigh deep, and one after another of us had to be dug out . . . 3½ hours after leaving the ridge, we stood on the Kien Glacier.'

The second passage¹ was made in 1875 by Captain the Hon. Paul Methuen (now Field-Marshal Lord Methuen) and Captain (now Major-General) Montgomery, with Hans Jaun and Andreas Maurer. They left Saas soon after midnight, and reached the col about 5 p.m. A number of steps had to be cut on the Zermatt side, and they were forced to spend the night from about 7 p.m. on a narrow rock ledge, an excessively cold and heavy wind blowing. Both travellers were slightly frost-bitten. Lord Methuen had already two seasons' experience—his first year having been under the guidance of Christian Almer and Peter Bohren.

The third traverse was apparently made by Messrs. Louis Sicard and Paul Vignon, with Alois Anthamatten as guide, and David Andenmatten as porter, on August 4, 1884. This

¹ The Editors are much indebted to Lord Methuen for this information. The entry, September 4, 1875, in Jaun's *Führerbuch* reads: 'Johann Jaun has accompanied Captain Montgomery and myself, during the last month, up Les Ecrins, Pelvoux, Mt. Blanc, L'Aiguille Verte, Rothorn, Gabelhorn, Domjoch, Dent Blanche. . . .'

party (*C.A.F. Ann.* xi. 1884) left the col about 4 P.M., bivouacked on the rocks from 6 P.M. till 7 A.M., and descended the 800 m. to the Kien Glacier, in very bad conditions, by 2 P.M. on the 5th. Their route from the gîte to the glacier was much to the N. of the direct descent from the col—was, in fact, under the Dom itself—and to judge from their tracing on the map cannot be separated from the Dom route of Messrs. A. Seiler, jun., von Mallinckrodt, and O. Eckenstein in 1887 (*A.J.* xiii. 413), or from that of Messrs. G. Winthrop Young and R. G. Mayor in 1906 (*A.J.* xxiii. 330).

The fourth crossing of the pass was made by Dr. C. J. Arkle and Mr. R. N. Arkle, with Alois and Roman Anthamatten. This is all I have been able to learn about passages of the Domjoch; except that of the first four parties two were benighted. Mr. Coutts Trotter's prediction, made in 1863 or 1864, that it could hardly become a popular pass, seems so far to have been justified. The description of the descent on the W. side in Dübi's *Guide des Alpes valaisannes*, vol. iii. p. 237–238, is as follows: 'On descend par des rochers raides, des pentes de neige et des couloirs, en se tenant plutôt à droite sous le Dom, jusqu'à ce qu'on ait traversé la rimaye et atteint le plateau supérieur du bras Nord du Glacier de Kien (environ 2 h. du col). On continue d'abord tout droit, puis à gauche contre les Kienfelsen.'

The Täschhorn's S.E. arête was first ascended by Mr. James Jackson, with the guides Christian and Ulrich Almer, on August 15, 1876 (*A.J.* viii. 345). The description of the route in the *Guide des Alpes valaisannes* (*ibid.* p. 226) says: 'Du col de Mischabel, on suit la crête en pierres brisées en contournant les gendarmes plutôt que de les escalader. En 2 h. on atteint ainsi l'endroit où une crête venant de l'ouest et séparant le glacier de Weingarten en une partie Nord et une partie Sud, rejoint l'arête principale. . . . On continue pendant $1\frac{3}{4}$ h. le long de l'arête S.E., presque horizontale et composée de rochers délités, jusqu'au pied du piton terminal. Ce dernier peut être gravi de deux façons: soit directement (en $\frac{3}{4}$ d'h.) par une arête raide de rochers solides, soit en contournant son premier tiers en hauteur par une pente de neige qui se trouve à droite, du haut de laquelle on atteint le sommet par une varappe d'une demi-heure.'

Mr. Jackson, describing his expedition (*ibid.*), says that his party left Randa at 1.30 A.M., struck the rocks of the arête at 8.30 A.M. and reached the top at 1.10 P.M. They descended to Randa in bad weather by 8.30 P.M.

A variation of the climb by which the ascent is made by the rib which divides the Weingarten Glacier into two parts was first effected by Mr. C. H. Stanley on August 5, 1881 (*Oe. A.Z.* 1881, 273; *S.A.C.J.* xlv. 69). Another variation was made by Dr. R. von Lendenfeld, with J. M. Biener and Clemenz Perren on August 26 of the same year. They ascended an easy rock-ridge which reaches the main ridge about half-way between the Mischabeljoch and the summit, further N. than the point where Stanley's rib strikes it (*Oe. A.Z.* 1881, 273).

The N. arête was first ascended by the Hon. Gerald FitzGerald and Sir F. J. Cullinan, with the guides Peter Knubel and Joseph Moser, on September 2, 1878 (*A.J.* ix. 109). 'Starting from the usual sleeping-place for the Täscherhorn (about three hours above Randa), they reached the Domjoch in six hours and twenty minutes, including a halt for daylight of three-quarters of an hour. They then followed the northern arête of the Täscherhorn, and gained the summit in two hours and ten minutes from the Domjoch. The arête was found to be difficult from its extreme narrowness, but, on the other hand, the rocks composing it, although very steep, were sound. It reminded the party very much of the Zinal arête of the Rothhorn. In several places along it, a small and treacherous-looking snow cornice overhung the Saas side of the mountain, and had to be carefully avoided.'

On August 10, 1920. we—that is to say, Heinrich Fux, his young brother Albert, a porter, and myself—left the Zermatt road in the early afternoon, with the object of traversing the Täscherhorn and Dom next day. We walked up the beautiful path to the Täschalp, passing a part of the hillside where there had been most extensive destruction of the forest by the blast produced by a recent avalanche, all the trees having, in fact, been rooted up over a large area :

‘ filling up

The ripe green valleys with Destruction's splinters.’

After a halt at the inn for tea and to obtain blankets and some additional provisions, we climbed the steep slope above the left bank of the Rothenbach and ascended a crest of moraine, which was not only steep but fell away very sharply on both sides ; and was tiring in the afternoon sun. Above this we halted on a kind of wilderness of stones comparatively level, and having crossed a snow-slope reached a wall of rock which falls away from the left flank of that branch of the Weingarten

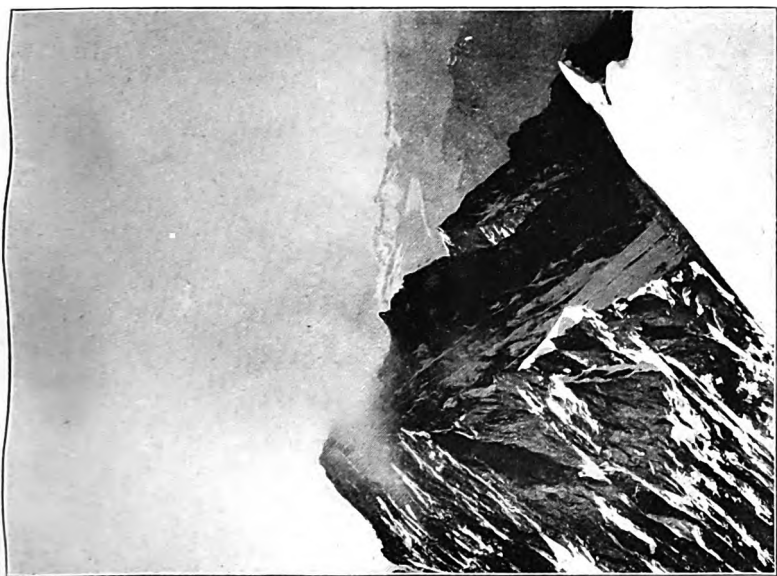
Glacier which descends from the Mischabeljoch. We climbed these steep rocks to a spot a few minutes below the top of the wall where on the true left-hand side of a gully was a satisfactory gîte, in the shape of a somewhat sloping but fairly wide ledge overhung by a rocky wall (height about 11,000 ft.). The chief drawback to the place, from my point of view, was that the rock exhibited a playful propensity of discharging small cascades of débris over my head. Next morning we easily reached the top of the rocks and ascended the gentle glacier, passing a few large crevasses and the easy snow slopes above to the Mischabeljoch. I was obviously unfit, however, as a result of a first night at a great height, so after a halt of $3\frac{1}{2}$ hours we strolled quietly back to Zermatt.

Next day, Thursday, August 12, we again set off on our walk in the early afternoon, and in less than $1\frac{1}{2}$ hour reached the Täschalp inn. After a 50-minutes' halt we again, at 4.20 p.m., started for the bivouac. After a halt at the stone wilderness we reached the gîte at 7.52 p.m. (total halts since leaving the inn, $\frac{3}{4}$ hour). It was satisfactory to note that not only had we done the walk up from the Täschalp in nearly half an hour's less time than two days before, but that I was far fresher, and had evidently become acclimatised to the rarity of the atmosphere. Heinrich had been delayed a few minutes by two guideless Swiss climber., who had gone up on the wrong side of the stream, and whom he was able to help across by means of the rope. The cooking apparatus proved somewhat recalcitrant, but by aid of spirit and wood we cooked at last an excellent meal of eggs and soup.

The weather was fine in our neighbourhood, but lightning beyond the range across the Zermatt Valley was seen at frequent intervals during the night, and caused us some anxiety. After a comfortable night we roped up, took leave of Summermatter, our porter, and started at 3.37 a.m. Having passed the guideless climbers who had bivouacked at the top of the rocks, we reached the Mischabeljoch at 5 a.m., and at 5.20 came to grips with the first rocks of the S.E. arête. The weather, albeit not cloudless, was quite promising. Our route first lay on the Saas side up easy broken rocks, past the old sleeping-place to the actual crest. A cornice of snow hanging over the Saas side soon necessitated a traverse at the head of a very steep snow couloir on the Täsch flank. Young Albert paid out the rope gradually whilst I was engaged in negotiating the ice-steps, Heinrich being by this time safely placed on the other side. We again followed the rocky crest,

and were ere long obliged to repeat our previous tactics. In fact, we had to turn snow cornices by in all four very steep ice couloirs on the Täsch side, each traverse necessitating a considerable amount of step-cutting. A great cornice now necessitated a flank movement, and forced us to cross a deep-set, very steep and striking icy couloir falling away to the W. Up the far side of this, outcrops from an impressive rocky tower on the left helped our leader Heinrich to obtain safe holds for hands and feet, and an interesting and exhilarating bit of climbing led us again to the ridge near the top of the tower. It was by now quite obvious that the ridge, although it is apt to be corniced in places and is apparently usually a rock climb, on the present occasion held a very abnormal amount of snow, and that our times were unlikely to be fast. Fux had nine days before remarked to me that he had never as late as this date in previous summers known so much winter snow on the Zermatt peaks. The snowy ridge was now followed and a short halt made for photography (22 minutes). The two guideless climbers who had come up by Stanley's rock rib now passed us. One of the last ice traverses on the W. side was across the head of the broad couloir, the white slope so well seen from Zermatt, just to the right of the final peak. From our 'square, precipitous steps in the ridge' we had a marvellous view, bounded by the gully sides of the blue-green valley shimmering far below. On reaching the crest of the ridge again we were obliged willy-nilly almost at once to leave it, and to make a few traverses under the cornices now on the Saas side. To do this it was necessary to tackle the loose and absolutely rotten rocks at the top of the excessively steep slope. This was to me the only unpleasant part of the day's mountaineering, and necessitated the very greatest care.

Up to the foot of the final peak we had enjoyed nearly continuous sunshine since striking the ridge, but the clouds were now nestling low upon the summit rocks. Steep but firm and easy rocks now led us up at first slightly to the right, then to the left. We halted for lunch from 11.2 till 11.33 A.M., and proceeding in the same direction reached at 11.46 A.M. the partly cloud-wrapped summit. The weather was now tending to deteriorate, but I still had some hopes of traversing the ridge to the Dom, and put any question of descending *vid* the ordinary W. face out of court by at once starting off down the Täschhorn's northern arête. A grand ridge this, narrow and sharp, but beautifully sound. Sometimes we were driven just below the actual crest on the W. side. Very sharp were



O. K. Williamson.

THE DOM AND SÜDLENZSPITZE
from top of Täschhorn.



O. K. Williamson.

THE TÄSCHHORN
from Saas Fee.

the edges of some of the rocks, as I discovered to the cost of the integrity of my thumb. Some way down a steep drop in the ridge necessitated a difficult and sensational traverse on the Saas side, the rock above bulging out in such fashion that one's centre of gravity was thrown rather uncomfortably outwards, and one had to step across on to a sloping rock without having any very adequate holds. Another traverse had to be made on the same flank, and, turning the last gendarme on the opposite or Randa face, we arrived at about 1.30 P.M. close to the Domjoch. It is of historic interest to note that Mr. Foster, in his account of the first passage of the Domjoch (*ibid.*), gave it as his opinion that the Täschhorn is inaccessible from the Domjoch. Snow was now beginning to fall in large flakes, and Heinrich gave it as his opinion that in the impending bad weather it would be unwise to risk such an exposed position as would be involved in continuing up the Dom's S. ridge. The logical alternative which we adopted was to descend the W. slopes of the Domjoch. These are very steep. At first we were upon snow in good condition. We bent at first rather to the right, but every now and then the snow gave place to ice and we were thus forced to change direction, usually to the left, so as to regain snow. Presently the ice predominated, and as far as possible we took to rocks; these at first were in patches, but for the last thousand feet or so were nearly continuous. One or two of the upper patches were very difficult, the rocks being in the form of slabs, which under the conditions—the snow was thawing nearly as fast as it fell—were wet, the holds were very insufficient (the rocks on this side of the mountain slope the wrong way) and the angle continuously steep. I think it was at the top of these rocks that a smooth and vertical though short pitch led us on to such a slab, and I did not envy Heinrich, who occupied the responsible rôle of last man. My admonition to Albert was, 'Ziehen Sie nicht'; to Heinrich, 'Halten Sie immer das Seil.' I found it best to bring friction into play as far as possible, with the result that the greater part of a certain patch on my knickerbockers had disappeared by the time we reached the bergschrund. I might, in fact, parody the words of the King in *Hamlet*:

'The patch remains, the man climbs down below,
Man without patch cannot to Zermatt go.'

By continuous care any slip was avoided, and continuous care was needed throughout the descent. Near the foot of

the rocks we crossed a small couloir, in whose neighbourhood we had previously seen some stones falling, and went down by the rocks to the right of this, which were under the Dom itself. We thus reached the bergschrund, and crossed it easily at about 4.50 p.m. Snow was now falling steadily as we descended the Kien Glacier, and presently gave place to rain. We traversed towards the Kienfelsen, and were able to shout words of advice to the guideless party who were above some séracs engaged in the descent of the Täschhorn by the ordinary route. Shedding the rope on the moraine we reached the Kien hut, now closed, about 7.15 p.m., and, after nearly losing our way in the overgrown and disused path, reached Randa about 8.30 p.m., the total halts since leaving the top having been only about 15 m. After a hurried 'thé simple,' no train or carriage being available, I walked up to Zermatt, the guides descending to St. Niklaus. I found, however, that my wife had not expected me that night, as Summermatter had told her that we could hardly return so early. The walk up the dark valley was rather a bore, but I reached Zermatt at 11 p.m., fresh and happy.

Times, *excluding* halts :

Sleeping place to Mischabeljoch .	1 hour 38 minutes
Mischabeljoch to summit . . .	5 hours 33 "
Summit to Domjoch . . .	1 hour 45 "
Descent of Domjoch . . .	3 hours 20 "
To Randa . . .	3 " 24 "
To Zermatt . . .	2 " —

Total . . . 17 hours 40 minutes

There are few expeditions I can look back upon with greater pleasure, and this one afforded much mountaineering variety. The S.E. ridge is, to my thinking, far finer as regards scenery than the Teufelsgrat—in fact, in my experience, it is unsurpassed in this respect among the great Alpine arêtes. Fux's opinion given against continuing over the Dom was, in the circumstances, probably wise, but it is certainly open to question whether our decision shortened the day's work.

As regards my companions, I can say that Heinrich has evidently derived full advantage from lessons learnt under such masters of the craft as Daniel Maquignaz and Jean Maître, and has confirmed my confident expectations that he would rise to the first rank, whilst his brother Albert played his part admirably.

THE HIGH LEVEL ROUTE.

BY ALEX. B. W. KENNEDY.

(Read before the Alpine Club, February 5, 1918.)

I AM afraid that there can be very few members of the Club here this evening whose boyhood was (like my own) rejoiced by reading of the earliest adventures of our noble predecessors in the three volumes of 'Peaks, Passes, and Glaciers' which appeared between 1859 and 1862, the years preceding the birth of the ALPINE JOURNAL itself in 1868. But I am sure that I can speak for all my contemporaries when I say that these stories made an ineffaceable impression upon our youthful minds, and were largely responsible for the beginnings of that enthusiasm for all things and matters mountainous which has for these long years been one of the unfailing joys of our lives.

For some reason or other—the nature of the reason, physical or metaphysical, is quite unimportant—I was always more attracted by climbing adventures which included travel, the getting from one point to another, than by climbing pure and simple, the mere going up and coming down again. (Not that I wish for a moment to undervalue the joy of a climb just to get to the top, although even then I prefer to come down another way.) At any rate, I can claim that in my preference I was obviously in agreement with such men as Tuckett and Tucker, and Moore and Walker, not to mention Bonney and Freshfield and Conway, some of them still happily with us. Naturally, with this preference I read and re-read, with special pleasure and interest, F. W. Jacomb's papers (in vol. i. of the second series of 'Peaks, Passes, and Glaciers,' 1862) describing the gradual working out of what he called, and what has since been known as, the 'High Level Route' between Chamonix and Zermatt.

Let me say here at once that none of the passes which constitute this route involve anything sensational whatever as climbs, nor even any difficult rock-work, although most of them demand, even under normal conditions, some considerable experience in way-finding over large and sometimes troublesome glaciers; but also further, that, taken from one end of the route to the other, they conduct the pedestrian

through a never-ending series of mountain and glacier scenes which it would probably be impossible to match in any other continuous excursion of equal length in the Alps.

What may be called the classical—the real original—High Level Route, as known and described in 1862, was as follows: First came a half-day or so to get from Chamonix to the starting-point, which was somewhere near the Lognan Chalets.¹ The first day on the main route crossed the Col d'Argentière to the Swiss Val Ferret and Orsières. Then came what Jacomb calls an 'intermediate link,' namely, the walk from Orsières to Bourg St. Pierre. The second day of serious climbing crossed the Col du Sonadon from Bourg to Chermontane or Chanrion. The third day originally went from Chermontane to Prarayen in the Valpelline by what is now known as the Col d'Oren,² but alternatively from Chermontane by the Glacier d'Otemma to Arolla; the last (fourth) day was from Prarayen by the Col de Valpelline to Zermatt, or alternatively (but this alternative had not actually been used when Jacomb wrote) from Arolla 'past the Dents des Bouquetins' to the Col de Valpelline, and so to Zermatt.

Naturally, as the geography of the country and its possibilities became better known, and this was within a very few years of Jacomb's papers, sundry modifications were made. The Col du Chardonnet, at first with the Fenêtre de Saleinaz, very early superseded the Col d'Argentière. The descent to Prarayen was generally abandoned as a part of the main route, and Arolla came to be the intermediate stopping-place. This led to the discovery, or use, of several different routes from Chermontane to Arolla, and naturally also of variant routes between Arolla and Zermatt.

The High Level Route, therefore, as a whole, covers a matter of four or five days, and I cannot think that anyone who wishes to enjoy the passes and their surroundings fully, and who is not pressed for time or anxious to make records, would take pleasure in combining two days' march into one, although I know this has been done by very distinguished climbers. (After all, if time be an object, the 'Col de Martigny' and the 'Col de Stalden' will take one from Chamonix to Zermatt between breakfast and dinner with entire comfort and through fine scenery!) As to this matter I cannot refrain

¹ Jacomb by a slip speaks of the Col de Balme; Winkworth started from the 'Argentière' Chalets.

² Originally called the 'Col de la Reuse de l'Arolla.'

from quoting Cust,³ who says, in connection with one of his own expeditions, which were certainly not remarkable for their shortness: 'We made for the lowest depression in this ridge, and for a short time had the satisfaction of joining the main line from Zermatt to Chermontane, a distance done by the express trains without stoppage. I have observed that so bewildering is the speed attained on this line that the parties traversing it know as much of the Cols they pass as an average Great Western traveller of the country towns on his route.'

I hope, in what I have to say, to be able to illustrate and give some particulars of all these principal variations; none of them are without interest; and by the kindness of my fellow-members I am able also to illustrate them all on the screen.

Jacomb recognises, with obvious regret, the existence of an 'intermediate link' between the Val Ferret and Bourg. He throws out a feeble hint that this may be combined with the Col d'Argentière into one day, an idea which will not commend itself strongly to the average walker when he finds himself down from the Saleinaz Glacier at Praz le Fort, and thinks of twelve or fourteen miles of high road ahead of him.

The 'intermediate link' is, in fact, a very steep, double-backed wooded range of hills, some six or eight miles across, and requiring ascents of about 8,500 and 1,600 ft., and descents of about 1,000 and 3,000 ft. I have not yet heard of any member of the Club whose enthusiasm for directness of route has led him to spend a day over this laborious crossing rather than go the longer way round by road and (probably) on wheels.

In 1864 Jacomb himself found an alternative to the northern circuit by Orsières in a southern circuit, from Bourg St. Pierre over the Col des Planards (9 197 ft.) to the Ferret Chalets.⁴ The next day he crossed the Col d'Argentière from Ferret to Chamonix, so that he felt justified in saying that his new Col truly became 'the connecting-link of the High Level Route.' It would not, of course, be by any means convenient if the western crossing were made by the Saleinaz Glacier, as it practically always is now.

There is, however, another 'intermediate link' which can be more satisfactorily dealt with. The High Level Route, taken from W. to E., starts, nominally and properly,

³ *A.J.* viii. 135.

⁴ *A.J.* ii. 44.

from Chamonix itself, but neither the Col d'Argentière nor the Col du Chardonnet can practically be taken direct from Chamonix. Although the actual walk to the Lognan Inn (the present starting-point) only occupies the hours of an afternoon, yet it is sufficient to represent all that can be done in a day—except gossiping and writing letters at Counttet's. I venture, therefore, to suggest that a much more interesting, as well as sporting, method of starting the route is to make on the first day a traverse of the easy Col des Grands Montets (10,634 ft.) across the northern ridge of the Verte. The map shows that it is very nearly in the direct line, and there is no doubt that it is an exceedingly pleasant first-day climb (a mere training walk, if you like, but it will leave you quite ready for dinner at Lognan), and it commands extraordinarily fine views. I shall therefore include this Col among the variants to be dealt with.

I feel the more justified in doing this from the remarks which Adams-Reilly made about it⁵ in 1862. He says: 'I have often wondered why this point is so seldom visited. I know of no view like it in the whole valley, for, while in the S.W. the Chamonix Aiguilles are seen massed together into a clustering pyramid, above which rises the great white dome of Mt. Blanc: towards the E. the view is more striking still, for from this point only can be seen from top to bottom the magnificent Aiguilles beyond the Glacier d'Argentière. The summit of the Aiguille Verte appears scarcely an hour's climb distant, and the double-headed Dru, though not so graceful in form as it is when seen from the valley, rises close at hand like a ruined tower above the séracs of the Glacier de Nant Blanc.'

The Col des Grands Montets has been so fully described before the Club in a paper by the late Neville Done,⁶ that I need not say anything further as to the nature of the pass, beyond noting that the large crevasses occurring unexpectedly at the very Col itself seem to be permanent institutions, as I twice found them there many years ago. I presume they are due to some huge serrations in the ridge itself.

COL D'ARGENTIÈRE.

Although Winkworth's crossing of the Col d'Argentière (11,549 ft.) was not at all the earliest high level passage from the Chamonix Valley to the Swiss Val Ferret, it deserves the

⁵ *A.J.* i. 259.

⁶ *A.J.* xxix. 234-5.

place of honour as being, originally, the first link in the classical High Level Route.

No doubt the difficulties and length of the Glacier de Saleinaz, as experienced by Principal Forbes and Justice Wills, discouraged the early explorers from pursuing that line; moreover, the routes traversed the Glacier du Tour and started naturally from the Col de Balme, an uncomfortably long distance from Chamonix itself. The relation of the Glaciers of Tour, Trient, Saleinaz, and Argentière to each other, also, was most imperfectly known, or not known at all—the maps being entirely erroneous. So it came about that Winkworth, starting from a night spent in an uninhabited chalet somewhere near Lognan⁷ (June 22, 1861), passed the foot of the Col du Chardonnet, and makes the note, 'between the Chardonnet and the Argentière is a tributary glacier, steep and crevassed, but I thought not impracticable, and leading—who knows where? Simond thought to the Glacier du Tour, and at the time I agreed with him; but it seems to me now quite possible that a passage may exist by it to the Glacier de Saleinaz. At any rate it is an interesting question, and had we not been engaged in the solution of a still more attractive problem, we should have tried to decide it.'

Winkworth had with him three Simonds. They left the sleeping-place at 1.30 and reached the Col without difficulty in seven hours, finding there the names of Tuckett and Wigram, who had reached the pass the year before, but had been unable to cross it owing to the state of the snow on the other side. Winkworth's party had some trouble on the descent through falling stones, but no other difficulties.

FENÊTRE DE SALEINAZ.

In the early 'fifties the geography of the district was, as I have said, very imperfectly known, and practically not known at all E. of the Glacier d'Argentière. There was also, it should be remembered, a great deal of confusion as to the Aiguille d'Argentière itself, which had been leading a disreputable second life under the name of Pointe des Plines. It is to be noticed in particular, in reading Forbes and Wills' accounts, that the peak they knew as the Aiguille d'Argentière was really the Aiguille du Chardonnet, seen from the Tour or the Saleinaz side.

⁷ *Peaks, Passes, and Glaciers*, II., 1, pp. 231 *et seq.*

The first crossing by a high level route recorded in our literature, from the valley of Chamonix to the Val Ferret, was that of Principal Forbes in 1850.⁸ He had with him Auguste Balmat and Charlet, and started from the Col de Balme. They ascended the Glacier du Tour and looked down on the Saleinaz Glacier, apparently from somewhere near the Col des Fourches, but did not like the look of things. They therefore traversed round to the névé of the Trient Glacier, and then turning to the right found what we now know best as Wills's Fenêtre de Saleinaz (10,709 ft.), which Charlet told Forbes that he had crossed some twelve years before. By the Fenêtre they descended to the Saleinaz Glacier, and, after trying both the left and the right bank, they finally left the ice pretty nearly, I think, where the Club hut now is. They descended by what must have been the left moraine of the Glacier d'Évole, which must then have been much more extensive than it is now. Passing under the foot of this they reached the road at Praz le Fort, and so to Orsières. The whole expedition proved a long one, but at any rate Forbes succeeded in making the crossing from valley to valley without a night out, in which he had better luck than some of his successors.

One more recorded crossing, at any rate, was made between the valleys of Chamonix and Ferret before what we may call the official working out of the high level route in 'Peaks, Passes, and Glaciers.'

Justice Wills' (we were all so familiar with Wills as a Judge, that it would be affectation to speak of him now as 'Mr.' Wills) historical description of his crossing of the Fenêtre, which forms the first paper in the first series of 'Peaks, Passes, and Glaciers,' may really be said to have taken an important, even if an indirect, part in the bringing into consideration of the various passes which, as a whole, eventually formed the High Level Route. Wills's paper must be so well known that there is no need to summarise it. To some of us here present I expect it helped to start at the very beginning that enthusiasm for mountaineering which is responsible very largely for the membership of this Club. His object was to repeat Forbes' route. He slept, therefore, at the Col de Balme, but owing to bad weather did not get a start made until very late. The party did not find the crossing from the Glacier du Tour to the Trient Plateau easy,

⁸ *Norway and its Glaciers* (1853), p. 330.

and in this way were a good deal delayed, only reaching the Fenêtre itself about four o'clock. They found great difficulty in getting down the Saleinaz Glacier, were eventually benighted, and had to camp above the Glacier, and Wills's story of that early night in the open, when such events were not such everyday occurrences as they have since become, is one of the delightful passages in Alpine literature. Eventually the party reached Orsières, half-starved, after about six hours' walking from their camp. Wills's guides were Balmat and Cachat, and with him were two friends whom he does not name, but who were, I believe, Mr. R. E. (afterwards Lord) Welby, and Mr. Russell, a barrister.

COL DU CHARDONNET.

As the Col du Chardonnet (10,909 ft.) had not been crossed in 1862, it naturally did not form a part of the scheme described by Jacomb in 'Peaks, Passes, and Glaciers.' The first actual crossing of this pass took place in August 1863, when it was traversed by Adams-Reilly and Brandram with J. Carrier. They slept at the Lognan Chalet and found no difficulty in the ascent at all, the snow being very good, and the séracs not difficult. But Adams-Reilly says: 'Even if I had not been warned by Mr. George's misfortunes, I should not have tried to descend by the lower icefall of the Saleinaz, for I had chosen a route which, though it involved the passage of another Col, would still be an immense saving of time. In pursuance of this plan we held on a straight course as far as the arm of the glacier leading to the Col Fenêtre, and then, turning sharply to the left, crossed the Col, and reached Orsières by the usual route.'

In the sketch maps attached to H. B. George's paper on the Col de la Tour Noire, this route of Adams-Reilly's is dotted, as it is in Moore's sketch. I am unable to say from my own knowledge how long the Saleinaz Glacier continued to present, or was believed to present, so great difficulties as to make the Orny route preferable to the direct one. I did not myself cross it until more than thirty years later, and at that time there was certainly no special trouble, either from crevasses or otherwise, on either side of the pass, and the whole expedition was most pleasant as far as the hut. After that one gets out of sight of the glacier and has no distant view, and

the path down to the Val Ferret is long and hot and rough enough to make one welcome the sight of any kind of wheeled vehicle at Praz le Fort which would render unnecessary the further tramp along the high road to Orsières.

I have not traversed the Orny route, so that I am unable to compare the two, but certainly the upper part of the Saleinaz Glacier is hard to beat.

I am not certain who made the first complete passage of the Col du Chardonnet—i.e. with descent by the Glacier de Saleinaz. Even Moore, in his *annus mirabilis* 1864,¹⁰ shirked the long glacier. He had started with Whymper, as will be remembered, for the ascent of the Aiguille d'Argentière, but this was found to be impracticable, although actually successful only a week later. He left Whymper and Adams-Reilly on the col to make a further attempt on the Aiguille, and descended with Almer to the Saleinaz Glacier, from which, he says, 'it is quite possible to force a passage straight down, but it is most unprofitable, and the necessity can be avoided by a rough and tiresome scramble along the rocks on the right bank. But we had no desire to encounter either the difficulties of the one course or the unpleasantness of the other, so determined to make for the Fenêtre de Saleinaz.'

But clearly the condition of the ice in later years has been much more favourable than it was fifty years ago.

COL DE LA TOUR NOIRE.

It was in endeavouring to repeat Winkworth's Col d'Argentière that H. B. George and R. J. S. Macdonald with C. Almer and M. Anderegg, made their wonderful (if highly injudicious) crossing of the Col de la Tour Noire (11,618 ft.) in 1863.¹¹ They drove to Argentière after supper, got three or four hours' sleep, and then started for the Glacier d'Argentière. Of the right bank of the glacier (that is to say, on their left) George says: 'On the opposite side of the glacier rose a series of peaks which we, after some desultory guessing, gave up the attempt to identify, and turned our attention to the more practical problem of discovering the exact locality of our Col.'

¹⁰ Moore's *Alps in 1864*, p. 160 *et seq.*

¹¹ *A.J.* i. 274. The name has been altered improperly to Col du Tour Noir, *cf. A.J.* xiv. 516. The culprit is properly Mieulet's map published by authority of the French Minister of War in 1865.

The head of the glacier, where I at least, on the delusive authority of our only map, was inclined to look for it, was closed by a semi-circle of dark rocks . . . and yet, somewhere there, if the map was worth anything, lay the well-known Col. The guides simply shook their heads when I showed them the map. . . . On our left there appeared easy access to either of two cols very near together. . . . Almer . . . pushed on alone to explore. . . . As we came in sight, Almer appeared on the Col telegraphing to the effect that it was all right.' The sky was cloudy, the slope below was steep and only partially visible, and it did not occur to them that they were possibly in a wrong place. The story of the descent of that 2,400 ft. of ice is one of the great stories of the first volume of the *ALPINE JOURNAL*. It took them $6\frac{1}{2}$ hours, cutting steps pretty nearly all the way, and they reached the névé below after five o'clock. They then saw to the left a gap which must no doubt have been the Fenêtre de Saleinaz, over which they could have crossed in time to get off the Orny Glacier at any rate by daylight. As, however, the party thought they were on La Neuvez Glacier the gap on the left did not appeal to them, and they made up their minds to start away down the glacier, especially as they found certain mysterious footprints leading in that direction. They continued as long as there was light to see anything, still under the impression that they were going down to the upper Val Ferret, made as good a night as they could on some wet rocks, got off the glacier three hours or so after leaving their bivouac, and after another three-quarters of an hour found chalets and a boy and some pieces of potato, and discovered that they were at the foot of the Glacier de Saleinaz.

I believe that this Col has only been crossed once since, and then in the reverse direction. I have not heard that any member of the Club recommends a third attempt.

BOURG ST. PIERRE TO THE VAL DE BAGNES.

COL DU SONADON.

It is not perhaps to be wondered at that the route by the Col du Sonadon was not very easily discovered. The Col itself is perfectly obvious and easily accessible from the E.; but on the W. side the icefall of the Sonadon Glacier, which is quite invisible from the valley, is so steep and broken up as to be unclimbable. To turn it by the S. (the side of the Vélán) is impracticable, and the only method so far found

for dealing with it is to cross over a ridge which projects southwards from the Combin itself, not very far from the head of the Col des Maisons Blanches. This ridge seems always to have looked very unpromising, and in August 1861,¹² when Jacomb and William Mathews made their first attempt on it, they tried to turn it altogether by taking first the Col des Maisons Blanches, hoping to return by a couloir on the E. side of the ridge and between it and the mass of the Combin de Valsorey. When, however, they got to the top of this couloir they found it to be impracticable. There was nothing for it but to return to St. Pierre, and the next day Jacomb (Mathews being unwell), with J. B. and Michel Croz, made an attempt to find a crossing of the ridge which had looked so troublesome. He seems to have found the now well-known couloir as the only possible route without much difficulty, and to have found also that it was uncomfortably frequented by falling stones and falling water, but he mentions no climbing difficulties. An easy descent from the ridge leads down to the névé, and once on this he had no difficulty in reaching the Col, the height of which is 11,447 ft. Jacomb did not complete the passage of the Col, but went as far down the Mont Durand Glacier as was necessary to convince himself that there was no difficulty on that side. The complete passage of the Col was first made in August 1861¹³ (that is, three weeks later), by J. F. Hardy, E. B. Prest, G. Johnson and J. A. Hudson, with Peter Perren and Moritz Andermatten as guides. They slept at Chermontane—although 'slept' is perhaps not the right description of the wonderful adventures which always happened at night to mountain climbers in chalets in those early days! They found no difficulty in ascending the Glacier du Mont Durand and reaching the proper Col du Sonadon. They seem, however, to have had considerable difficulty from large crevasses in the upper part of the Sonadon Glacier, only reaching at length the head of the couloir after much difficult ice work.

The couloir has received, according to my recollection, a worse name than it really deserves. Starting from St. Pierre in the morning early there is not much chance of falling stones, and I remember no difficulties greater than that of one pitch where we sent up knapsacks and axes by the rope so as to clamber unimpeded. We did, however, like Hardy's party,

¹² *Peaks, Passes, and Glaciers*, II., vol. i. p. 241 *et seq.*

¹³ *Ibid.* p. 252 *et seq.*

find some difficulties in the ice in the upper part of the glacier, which no doubt varies from year to year. Once the Col is reached there are no difficulties whatever on the eastern side.

The head of the couloir is very difficult to find when the pass is taken from the E., and no doubt the pass is best made from the W., if only on account of the chance of stones in the couloir. The course of the lower part of the Sonadon Glacier keeps it quite out of sight until a somewhat high level is reached, but the backward view of the Mont Blanc range in the early morning from somewhere near the Chalets d'Amont is a thing which lives in one's memory.

VAL DE BAGNES TO THE VALPELLINE.

In connection with the next section of the route several things have to be remembered which put the explorers of the 'sixties in quite a different position from that in which we now are. In the first place, Arolla (the 'Chalet d'Otemma') practically did not exist, nor was any direct route from Arolla to Zermatt known. Not unnaturally, therefore, the half-way house was looked for in the Valpelline, and the chalets at Prarayen seemed to be the only available spot. Hence the problem as it presented itself originally was to find a route from Chermontane to Prarayen, and then a route from Prarayen to Zermatt. The confusion was still further increased by the obstinate belief on the part of the natives in the existence of a mythical 'Crête à Collon' entirely blocking the upper part of the Otemma Glacier, which otherwise appeared to form so tempting a roadway. Very little was known about the southern or south-eastern side of the Otemma Glacier, which subsequently was so thoroughly investigated by Mr. Cust; but from Prarayen there is a pass which seems to have been well known in 1861, which is now called the Col d'Oren (10,687 ft.), and which opens from the head of a valley leading up from Prarayen just N. of La Sengla on to the upper part of the Glacier d'Otemma. As a link in the High Level Route, this pass was first traversed by Tuckett in 1861, along with C. H. and W. F. Fox and with J. J. Bennen and Peter Perren as guides.¹⁴

The tradition as to the 'Crête à Collon' was so definite that when Tuckett, starting from Prarayen, found himself at the pass he thought the Crête must lie to his left, and that he must be to the E. of it and looking down on the Vuibez Glacier.

¹⁴ *Peaks, Passes, and Glaciers*, II., vol. i. p. 295.

As soon, however, as the party reached the main glacier they discovered their mistake, and saw that in all probability the 'Crête' must be a creature of imagination. It may be remembered that in 1856, when the two brothers Mathews were in the Val de Bagnes on an expedition which I must mention presently, the information that they received from their guide was that the head of the Glacier de Chermontane (that is, the Glacier d'Otemma) was absolutely barred; that he had once followed a chamois to the top of the Pic d'Otemma, and examined the 'Crête à Collon,' and his word might be taken for it that they could not get across. Mathews did not, however, consider Trolliet's opinion as absolutely decisive about the 'Crête,' and adds that if ever he were there again he would try, regarding no place as really impossible until it had been actually tried.

Tuckett and his friends did not find any difficulty on descending the Otemma Glacier, except what was due to the softness of the snow and some awkward séracs at the bottom on the N. side. Bad weather came on, and the party decided (the comfortable little inn at Mauvoisin not being in existence) that they would cross the Col de Fenêtre, and so eventually turned up at Aosta at 11 P.M. in a half-drowned condition.

In 1879 Cust discovered and crossed a pass which he suggested as an alternative route between Prarayen and Chermontane.¹⁵ He called it the Col de Blancien, and describes it as S. of the Bec de Blancien and at the head of a side valley descending to the Valpelline above Bionaz. Its height is 11,454 ft., and by it the Glacier d'Otemma can be reached in less than five hours from Prarayen.

CHERMONTANE (OR THE VAL DE BAGNES) TO AROLLA.

When Jacomb dealt with the High Level Route the actual crossing from Arolla to the Col de Valpelline and Zermatt had not been made, but as it had been already pronounced 'practicable,' he had included in his scheme the crossing of the Col de Chermontane (10,120 ft.) to Arolla, which was first made by the brothers Buxton and J. J. Cowell in August 1861.¹⁶ They had made an attempt on the Grand Combin which had failed (Sir Fowell Buxton says), 'partly owing to

¹⁵ *A.J.* ix. 365.

¹⁶ *Peaks, Passes, and Glaciers*, II., vol. i. p. 277.

the discouraging nature of our guide, old Bernard Trolliet, whose passion for giving up any undertaking when about three parts accomplished amounted to a monomania.' This was the very gentleman who had tried to persuade Tuckett two months before of the existence of the mythical Crête, and had prevented Mathews from attempting the pass in 1856. Buxton's party managed, after some trouble, to dismiss him; but although they had heard of Tuckett's expedition, they knew that he had not been actually quite to the head of the Otemma Glacier, and their own expedition started under considerable uncertainty about the whole matter, an uncertainty which was strengthened when they got far enough up the ice to see ahead of them a rock ridge which certainly appeared to bar their passage. They began to consider which of the gaps in it they should aim at first, and the illusion actually continued until they had nearly reached the pass, when the 'Crête' finally resolved itself into the ridge (presumably the Bertol ridge) on the opposite side of the Arolla Glacier, and one more legend was exploded for ever!

The only maps which the party had with them were naturally very inaccurate, and left them quite in doubt as to the route by which they should descend to the Arolla Glacier. They attempted to get down the Vuïbez icefall, but found so much difficulty that they had to re-ascend, and they eventually reached the valley by the now usual route by means of the pass at the head of the Pièce Glacier (10,498 ft.).

I have already mentioned that no route from Arolla direct to Zermatt was as yet known, at least to travellers. The Buxton party, therefore, crossed the Col de Collon the next day down to Prarayen, and in doing so noticed particularly a snowy Col between the Bouquetins and the Mt. Brûlé, which they thought might lead to the Col de Valpelline. On the day after, going by that pass from Prarayen to Zermatt, they saw the other side of this same depression, and they may, therefore, be said to have definitely discovered it, although they did not cross it.

The first actual crossing direct from Zermatt to Arolla was made by Sir George Young, C. H. Pilkington, and E. E. Bowen in August 1862 (a year after Buxton's expedition), the new Col being named by them the Col du Mt. Brûlé (10,925 ft.).¹⁷ The party had with them Payot and Favret of Chamonix and

¹⁷ *A.J.* i. 63.

Nägeli of Meiringen. From the Col de Valpelline they rounded the top of the basin now called the upper Glacier Za de Zan, crossed under the Col des Bouquetins, and finally, after a gentle ascent, crossed the easy ridge which led to the top of the Collon Glacier.

Certain passes from the Val d'Hérémence or the Val d'Hérens to the Val de Bagnes were well known at a date earlier than that of 'Peaks, Passes and Glaciers.' Studer¹⁸ says that long before his time hunters and smugglers had crossed by the Pas de Chèvres, the Col de Seilon, and the Col du Mt. Rouge to Chermontane, and thence to Italy, but thinks that probably his party were the first 'tourists' to do so, this being in the year 1849.

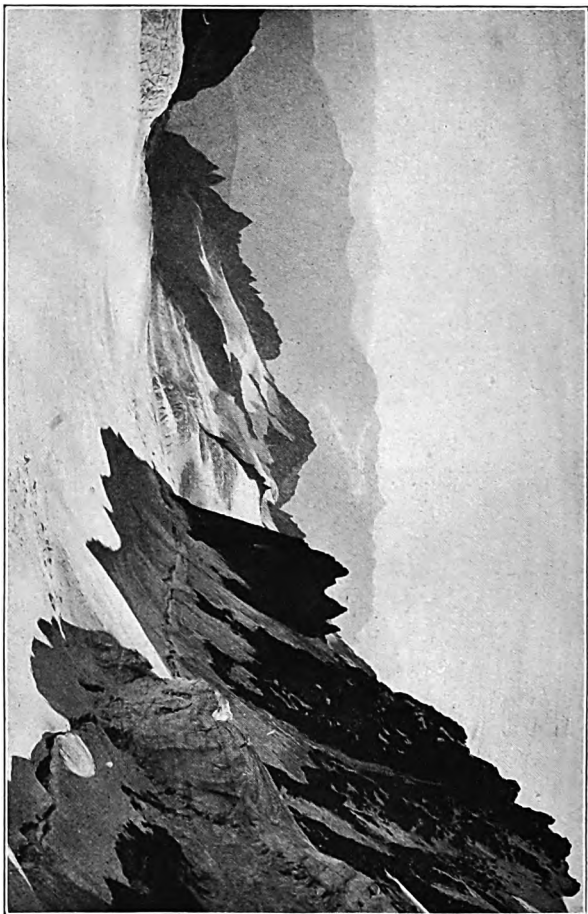
The first mention of this crossing in the Club literature, however, is in a paper by William and C. E. Mathews,¹⁹ in which were described the ascents of the Vêlan and Grand Combin, and in particular the passage of the Col du Mt. Rouge. The Mathews were at Chermontane in 1856, and wished to get to Arolla by the Glacier d'Otemma—'by a pass which Forbes supposed to exist, and which we concluded must be at the spot marked "Crête à Collon" on Studer's map.' The party gave up their intention of exploring the Glacier d'Otemma and instead climbed the Mt. Avril, from which they saw what was no doubt the Col du Sonadon. They descended to Chermontane and discussed with the shepherds how best they might get across the mountains. They were told that they might go over the Col de Crête Sèche to Bionaz in the Valpelline, or that they might go by the Col du Mt. Rouge to Hérémence. In these circumstances they sent down the valley for the redoubtable Bernard Trolliet, 'le premier chasseur de Bagnes.' Eventually this gentleman arrived and undertook to take them in one day to Evolena by the Col du Mt. Rouge, or by the Col de Collon, but which would involve a two days' journey by way of the Valpelline. As for the Glacier d'Otemma, he gave them the opinion which I have already quoted. The Mathews decided to cross by the Col du Mt. Rouge (10,962 ft.). In the Giétroz Glacier as far as the Col de Seilon (10,660 ft.) they found considerable difficulty from crevasses. Crossing the head of the Seilon Glacier, Trolliet pointed out the Pas de Chèvres (9354 ft.) as repre-

¹⁸ *Ueber Eis und Schnee*, second edition, vol. ii. p. 400.

¹⁹ *Peaks, Passes and Glaciers*, vol. i. p. 76.



LE PAS DE CHÈVRES.



S. Spencer.

THE SALEINAZ GLACIER
from below the Col du Chardonnet

senting their route. Mathews says: 'When we arrived beneath it we found a very narrow ledge of rock running up to a little col. Trolliet said we could pass without difficulty; but it looked so ugly that we preferred to keep to the right, and crossing the ridge at a higher level we got easily down to the other side.' It is something to find that even our great predecessors occasionally made absurd mistakes of this kind.²⁰

This route, with slight variations according to whether the start is made from Chanrion or Mauvoisin, remains probably the most convenient passage between the two valleys, and is certainly full of beautiful views from whichever direction it be taken. From Mauvoisin, going to Arolla, one naturally climbs the steep bank of the Val de Bagnes as soon as possible, after which there is a delightful stroll along the Glacier de Giétroz to the Col de Seilon.

The most notable variant in this section of the High Level Route is perhaps Moore's, the now named Col de la Serpentine (11,684 ft.),²¹ with Horace Walker in 1865. He made the first ascent of the Pigne d'Arolla *en route*, calls it a 'rank impostor,' but admits that it has 'enormous crevasses' and an unequalled view. For some reason he descended by the W. branch of the Glacier de Breney instead of direct by the main branch, and reaching Chanrion at 1.45 proceeded to cross the Col de Fenêtre the same afternoon to the Valpelline. The Col de Breney at the head of the main branch seems first to have been crossed in 1878 by T. Brooksbank and R. N. Hayward²² (with Kaspar and Jakob Blatter), who point out the relation between the two passes.

THE VALPELLINE TO ZERMATT.

The last pass in Jacomb's scheme of the High Level Route was the Col de Valpelline (11,687 ft.), first crossed in August 1860²³ from Prarayen by Jacomb himself, with a single guide (Kronig), after a reconnaissance from the Château des

²⁰ Mathews says that Kennedy, Ainslie, and Stevenson crossed it in 1855, but I can find no further reference to this in their book than that they had explored the glaciers and passes in the neighbourhood of Monte Rosa and Mont Combin.

²¹ *A.J.* v. 316.

²² *A.J.* vi. 366.

²³ *Peaks, Passes and Glaciers*, II., vol. i. p. 333.

Dames, and an unsuccessful attempt balked by very bad weather. He found some difficulty from deep snow and from large crevasses on the Zermatt side, but otherwise the route was free from any trouble, as in fact I think it always must be. Jacomb made the first ascent of the Tête Blanche on this occasion. Knapsacks were left on the Col, to which therefore a return had to be made—otherwise from the Tête Blanche itself it is better to descend to the N.E. by what is called on some maps the Col de la Tête Blanche, and so reach the Stock Glacier some distance below the Col de Valpelline. By either of these passes one avoids the bergschrund which sometimes gives trouble at the Col d'Hérens.

From the Col de Valpelline the Tête de Valpelline, an even finer viewpoint than the Tête Blanche, can be reached by easy snow slopes, and the digression is well worth while.

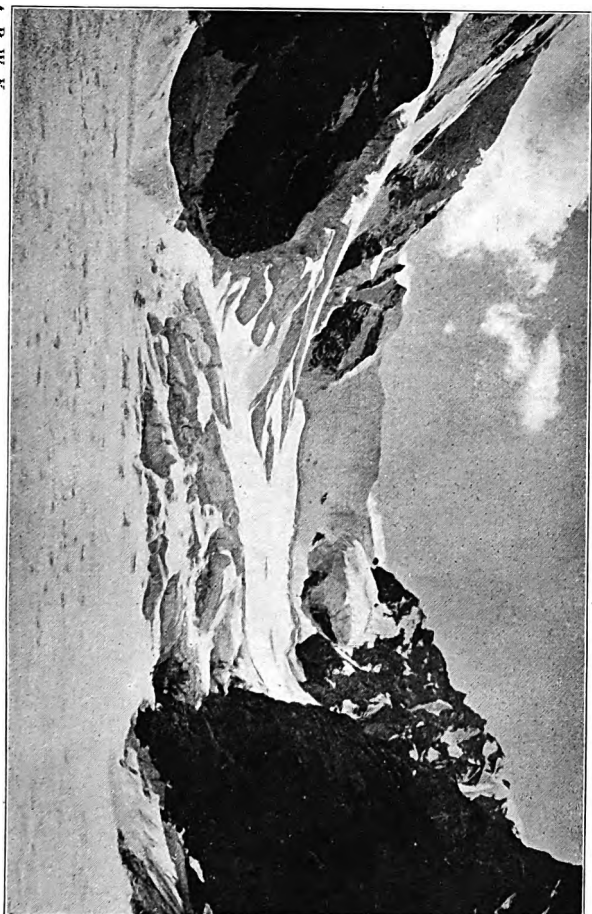
From the Col de Valpelline to Zermatt—or to the Schwarzsee—the route is so well known that it needs no description, even if I were capable of finding words to describe the succession of the noblest of the Valais peaks which surround one during the whole of the descent.

The only important variant on the Valpelline as a pass between Zermatt and Prarayen—the Tiefenmatten Joch ²⁴ (11,789 ft.)—we owe to Moore, who crossed it for the first time in 1871, with G. E. Foster, Jakob Anderegg and Hans Baumann. That the route had great difficulties may be inferred from Moore's statement :

'I should have been sorry to attempt the ascent we had before us with inferior guides, but with men like Jakob and Baumann much might be risked. They showed no hesitation about proceeding, but only impressed upon us that, once committed to the venture, we must push on, without halt, at the top of our speed, as upon it might depend our safety.' He speaks of the crossing as 'the most helter-skelter, breathless ascent I ever made'—'in those forty-five minutes had been excitement enough for three hours.'

All this, however, was soon forgotten, and when the party got within a couple of hours of Prarayen (about noon) it occurred to them that it would be 'a pity to pass the afternoon in idleness,' so they crossed the glacier, climbed 2000 ft. of rocks to the Col du Mont Brûlé, and finally reached Evolena at 8 p.m. (I fear that on some occasions Moore must have travelled by Cust's express train !)

²⁴ *A.J.* v. 321, and *Alps in 1864*, chap. xvii.



A. B. W. K.

THE TIEFENMATTEN JOCH
from above the lower Icefall.



A. B. W. K.

W. FACE OF THE MATTERHORN.
from below the Stockje.

AROLLA TO ZERMATT.

There remains only to mention what is now the most usual final day's walk in the High Level Route—a pass, like the last mentioned, crossed for the first time by Moore.

I have already spoken of the first-discovered route from Arolla to Zermatt by the Col du Mont Brûlé and the Valpelline in 1862. This apparently remained the only known passage until 1865,²⁵ when Moore and Horace Walker, with Jakob Anderegg, crossed from Zermatt by the Col d'Hérens and the S. Col de Bertol (11,200 ft.) to Arolla. There is, of course, no difficulty about this pass, but for continuously glorious views it is probably the finest of all the 'links' in the High Level Route. For the sake of the views, however, it is clearly preferable to cross it from W. to E. than from E. to W. It is probably most repaying in that case to keep well to the S. after reaching the Mont Miné Glacier, so as to reach a point somewhere near the Col des Bouquetins, then to keep round more or less on the watershed to the Tête Blanche, and over it, and finally to reach the Stock Glacier by the Col de la Tête Blanche.

On the other hand, it must be said that although the views to the N. are much finer by this route than on the Za de Zan Glacier, the latter has the great additional interest of allowing one to see something of the structure of the badly mapped mountain chain (so fully worked out by Alfred Topham and Cust) in this corner of Northern Italy, of which otherwise it is not easy to form any idea.

In what I have said about the High Level Route I have confined myself strictly to narrative, chiefly historical narrative, and have not attempted to dilate upon the wonderful beauty, and indeed grandeur, of every one of the passes which form the links in the chain. This is partly—for your sakes—because 'purple patches' do not come readily to the tongue of an engineer, but partly also because the slides which I have been able to show you give you a much better idea of the glories of the route than could any words of mine.

To the great majority of the Club members to whom the High Level Route is familiar, I am sure that the reminder given by the slides must have been an unmingled pleasure—to the minority, if it exists, to whom these passes are not familiar, I hope the views may have formed the foundation of a solemn

²⁵ *A.J.* ii. 133, and v. 314.

resolution that the unfamiliarity shall disappear as soon as the end of the war allows us once more to see our beloved mountains. Such a resolution will never be regretted.

HEIGHTS OF PASSES CONNECTED WITH THE HIGH
LEVEL ROUTE.

	Feet.
Col des Grands Montets	10,634
Col d'Argentière	11,549
Fenêtre de Saleinaz	10,709
Col du Chardonnet	10,909
Col de la Tour Noire	11,618
Col des Maisons Blanches	11,240
Col du Sonadon	11,447
Col d'Oren	10,637
Col de Chermontane	10,120
Col de Pièce	10,498
Col du Mt. Brûlé	10,925
Col du Mt. Rouge	10,962
Col de Seilon	10,660
Pas de Chèvres	9,354
Col de la Serpentine	11,634
Col de Breney	11,975
Col de Valpelline	11,687
Col de la Tête Blanche	11,811
Col d'Hérens	11,418
Tiefenmatten Joch	11,789
Col de Bertol	11,200

NOTES ON THE OXFORD UNIVERSITY EXPEDITION
TO SPITSBERGEN.

By N. E. ODELL.

THE expedition which went out this summer comprised two parties. The first party, under the leadership of the Rev. F. R. C. Jourdain, left England in May, and after visiting Bear Island proceeded up the W. coast of Spitsbergen, making studies of the fauna, flora, and geology. The second party left England on July 2, and after numerous shipping delays reached Spitsbergen on July 21. This party had its base at Klaas Billen Bay, at the head of Ice Fiord, in huts, the property of the Scottish Spitsbergen Syndicate, to which the expedition is deeply indebted for its kindly assistance and co-operation.

The original intention of the topographical section of the party had been to make a theodolite survey to connect up with the geodetic points in the interior of New Friesland, and be carried on to the eastern coast at Hinlopen Strait. In passing, it may be said that these geodetic points were fixed by the Russian party employed in the measurement of an arc of meridian in 1899-1901.

A start was made with the theodolite work, and some progress made with the survey up the Nordenskiöld Glacier towards the great inland Snow Plateau. For the purposes of reconnaissance and establishing forward survey points, a party, consisting of Dr. T. G. Longstaff, R. W. Segnit, and the writer, made the traverse of Mount Terrier—altitude about 3600 ft.—believed to be a first ascent. Owing to the short time available for exploration inland consequent upon shipping difficulties necessitating our departure from Spitsbergen on August 25, and in addition the unfortunate illness of R. F. Stobart, we were obliged to modify our plans and decide on carrying forward a plane-table-photographic survey inland.

On August 7 the sledging party, consisting of R. A. Frazer, Longstaff, and the writer, left Klaas Billen Bay for the interior. The previously reconnoitred route was followed up the Nordenskiöld Glacier. The combined work of carrying forward the survey and conveying all our stores and equipment up 10 miles of none too easy glacier proved a strenuous opening to the journey. Our first camp was made at the foot of Mount Terrier, and thence a way was made between Mount Terrier and Mount Ferrier up to the great Snow Plateau.

Here we made our second camp, at an altitude of about 3000 ft. to the E. of Terrier. Thenceforward we maintained a mean north-easterly direction—frequently having to steer by compass owing to mist—across the high undulating plateau of Garwoodland, till we struck the main range in this region running N.N.W. and S.S.E.

On ascending to a convenient col in this range, spread out before us and winding away to the N.E. was a large glacier with many tributaries. Camp was pitched on the col, and bad weather delayed the party here for three days. Running down this newly discovered glacier, we reached in about 8 miles a huge glacier confluence, with a large tributary flowing in from the N. A striking feature hereabouts also was a large rock nunatak rising out of the glacier, in aspect like a lion. The eastern coast at Hinlopen Strait was a bare 20 miles

distant, but bad visibility prevented our definitely sighting it. With the utmost reluctance the party was obliged to return, so as to be back at Klaas Billen Bay in time for the ship. At one point during the return journey a typical Arctic blizzard detained us for 2 days in our tent. But loss of time was made good by a forced march of 25 hours back to Klaas Billen Bay.

That the glacier system referred to is a new discovery appears from reference to the results of the Russian Arc-measuring Expedition. That expedition mapped the region around Mount Svanberg to the S., and also that around Mounts Chydenins and Tchernychew to the N.W. of this glacier system, but the area occupied by the latter is left blank on their map. The party proposes naming this glacier the 'Oxford Glacier.' Sir Martin Conway and Professor Garwood's route towards Chydenins in 1897 lay altogether to the W. of ours.

One important result of the expedition was the disproving of the term 'High Inland Ice' applied to this part of Eastern Spitsbergen. Actually, the region is not so much an ice-sheet of the Greenland variety (although the finding of 'erratics' high up on Mount Terrier shows that at one period the ice-level was far higher than now) as a névé resting on an undulating floor, the latter breaking through on the E. to form low ranges separating the many glaciers.

A good many geological specimens were collected, which it is hoped may throw light on the structure of Eastern Spitsbergen, but priority was given to topographical work at the expense of the geology.

A TRAVERSE OF THE DENT BLANCHE AND FIRST ASCENT OF THE ZINAL FACE OF THE OBERSCHALLIJOCH.

By R. W. LLOYD.

[Read before the Alpine Club, May 3, 1921.]

IT has been suggested to me that before describing a new climb made last year, I should give a short account of an ascent made with Joseph Pollinger and Franz Imboden in 1910, a note of which appeared in 'A.J.' xxv. 452-3.

In 1910 I went direct to the Engadine, being joined by Joseph there. We were only two on the rope, as was our custom in that country, and had some very interesting climbing.



THE S.E. FACE OF THE DENT BLANCHE ON 27TH JULY, 1910, AS SEEN FROM THE SCHONBUL GLACIER

including several ascents from the Forno hut, with a new route up the Torrone Centrale. After some bad weather we climbed Piz Roseg, and on July 22 made the first ascent of the year of the Bernina by the Scharte, which was (as were most of the mountains that year) in bad condition. However, we had a delightful climb, and were well pleased with ourselves.

Joseph had for some time past been urging me to attempt a route on the Dent Blanche, which he feared someone else would try, as the Schönbühl hut had been built lately.

The proposal was to gain from the S. the eastern arête above the Col de Zinal.¹

We went by way of the Bernina Bahn, which had recently been opened, through to Milan, and thence by the Simplon to Zermatt.

After some bad weather we left on July 26 for the Schönbühl, arriving in the early afternoon in still doubtful weather, which turned in the evening to a snowstorm.

At 1 A.M. on the 27th the weather looked very bad, but at 3 o'clock it showed signs of clearing, and at 3.45 we started.²

We directed our steps towards the Col de Zinal, reaching the bergschrund at its foot soon after 5, and crossing this struck up the steep snow and rocks on our left, bearing N.W. to the subsidiary rock arête leading to the main E. arête. The rocks were covered with two to three inches of fresh snow, with some ice. We had quite a difficult pitch through a cave blocked with snow at the far end, and Joseph had to stand on the porter's shoulder and clamber right over the large stone top. I found it somewhat difficult, owing to the new snow and ice benumbing one's fingers and to the very poor holds. We had a good deal of trouble here and lost some time. Soon afterwards we gained the crest of the subsidiary ridge, and climbed slabby ice and snow-covered rocks until we came to a badly iced chimney difficult to approach, on account of the new snow and ice. This chimney proved to be full of ice and new snow, and we had to proceed with great care. We again had slabby iced rocks up to the main E. arête, reached at 8.40. We had taken over three hours to do the new part of our projected climb.

We proceeded along the arête and came to a rather awkward gendarme, which I found, on trying to climb down,

¹ For a discussion on the name see *A.J.* xxv. 563-5, and Dr. Dübi's *Walliser Alpen*, vol. ii. p. 76 (1921).

² See *A.J.* xxv. 452-3, with illustration.

ended in an overhang, so I had to trust to the rope for the last few feet, while Joseph used the spare rope, which stuck and caused a good deal of trouble. We turned the big red gendarme on the S. side, and on rejoining the crest of the arête kept as much on the steep N. side as we dared. The cornice on the S. was bad, and the new snow made things much worse.

After nearly three hours of continuous and difficult climbing over gendarme, arête, and cornice, we sat down about noon by a big tower for our first rest and meal. We had, however, a long way to go, and after 35 minutes we were again on the move. We could not turn the tower on the S., or traverse it, owing to the conditions, so turned it on the precipitous N. side, quite an exciting business.

Then for some hours followed a succession of great cornices, along which we had, not infrequently, to make our way, owing to the excessive steepness of the slope. At length we reached a tall, thin, red pinnacle, the look of which had been a source of anxiety for some hours. It was much too steep to traverse, the cornice connecting it to the arête being so thin that one could see light through. We had a good look at the couloir on the S. side, the snow in which had had the sun on it for many hours, while the inclination was very great. However, time was passing, and after a general warning that each man must see to himself, we faced the traverse of the couloir, and with some little difficulty and anxiety got safely back to the arête, our only worry being that the day was drawing on.

From here the climb involved a succession of steep snow arêtes and cornices, which at times we were compelled to risk.

Shortly before we reached the final snow slopes, Joseph complained of feeling unwell. He had led all day, and it was now a little after five in the afternoon, and he had had only one halt of thirty-five minutes. The work had been most arduous and difficult. However, he recovered with a little help from my flask and a Brand's jelly, and manfully retained the lead.

We were much relieved when, after a halt of nine minutes, we gained the top at 5.42, after 14 hours of almost continuous going. It was an immense effort, and a great performance on Joseph's part.

We only stayed four minutes, owing to the lateness of the hour, and literally ran down the ordinary way, which, in comparison, seemed very easy.

We reached the foot of the Wandfluh just after dark, the last half-hour being very disagreeable. Crossing a bergschrund in the dark on a steep slope is not a pleasing experience. We missed the hut in the dark and walked into the lake. However, we soon climbed up the steep side of the glacier and gained the hut at 11.15 p.m., not particularly fresh.

We were much disgusted at being awakened by the arrival of a rescue party. It appeared that Dr. Seiler had heard there were some people on the top of the Dent Blanche at about 6 p.m., so sent out to look for them. When we got back to Zermatt next day he said to me, 'Of course, had I known it was you I should not have troubled.' I have since wondered whether to regard this as a compliment or not!

Neither Joseph nor myself had ever seen such an arête, with its recurring cornices, large and small, and although we have since had many a hard day together, we still consider it the greatest climb we have accomplished. The new snow following the almost continuous bad weather made matters difficult and dangerous. Still, our route, in good condition, must be one of the finest in the Alps.

Chamonix was again my headquarters for 1920, and I reached Couttet's hospitable hotel early in July. Shortly afterwards I had a letter from my friend Sir Edward Davidson, suggesting that I should try to cross from Zinal to Zermatt by way of the so-called Oberschallijoch, the first and only passage of the pass having been made from Zermatt to Zinal on September 18, 1902, by himself, with Ulrich Almer and Joseph Pollinger. Needless to say, I was delighted with the suggestion, and Joseph Pollinger and I decided to make this the chief item in our programme.

After a few training walks (which I found considerably less irksome than last year) we went to the Pavillon de Trélatête, and next day had a very easy walk up Mont Tondou, a pleasant little mountain and a magnificent view-point.

The following day we ascended the Aiguille de Béranger, merely a rather long walk, and followed the very sharp and longish snow arête to the Dôme de Miage, from which we had a magnificent view.

We descended by a very sharp snow arête to the nameless col between the Dôme and the small rocky point on the arête leading to the Col de Miage. We had to go sideways for some distance with one hand over the arête, kicking steps as we went along. The snow was good, but it would not have been

safe later in the day. A sharp descent from the arête took us on to the greatly crevassed upper part of the Trélatête Glacier, from which, after some little trouble, we gained the main glacier. The crevasses were fairly covered, and we had to be very careful. I did slip partly through one snow roof just at the edge of an enormous crevasse, and when I had a glimpse of its size and depth I was thankful that I only went in with one leg. The glacier was also very rough and tiring, and we were glad to reach the path at about 12.30 P.M., whence it was an easy twenty-five minutes to the Pavillon. In turning round to speak to Joseph about five minutes from home on an easy path, I unfortunately twisted my ankle.

I was confined to Couttet's garden for the next fortnight—most of the time in very fine weather! Another week passed in walks of gradually extending length.

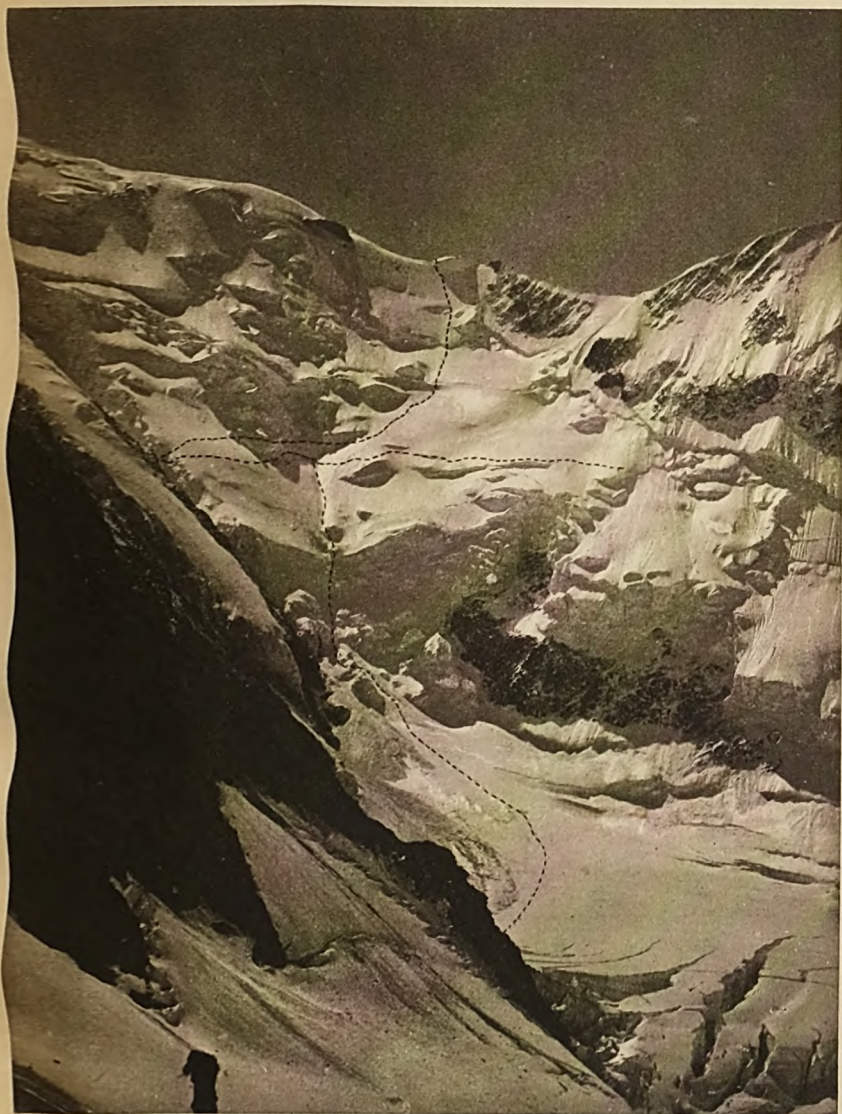
On August 8 we set off for the Tête Rousse Cabane, with the intention of going along the arête of the Glacier de Bionnassay Français, to look at our last year's climb and the Aiguille de Bionnassay itself from this direction. Unfortunately, the weather was bad, and on the way to the Cabane we got wet through. For the next three days the weather was impossible, and eventually we returned to Chamonix on the 6th. The next day, of course, was brilliant, and we were anything but pleased with ourselves for having left the Cabane. However, on Sunday the 8th we walked up to the Grands Mulets in six and a half hours, and had a pleasant walk up Mt. Blanc on Monday morning, returning to Chamonix in the evening.

By this time I was fairly fit, and although my ankle resented too much work, especially down hill, still, it would 'go.' We decided to have a day's rest and then start for Zinal, which we did in lovely, although somewhat uncertain, weather.

THE OBERSCHALLIJÖCH OR HOHLICHTPASS.

We arrived at Zinal in the rain, but hoped for better things in the morning. Unfortunately, the weather next day was not at all inviting, so we arranged to start from Zinal at midnight if any improvement justified our doing so.

At about 9 o'clock the weather looked a little better, and we made up our minds to leave at midnight. We started punctually in fairly decent weather, but at about 1 o'clock the clouds came over and the night became very dark. About 5.30 A.M. the weather, which had been gradually getting worse,



R. W. Lloyd, photo.

THE FRENCH SIDE OF THE COL DE BIONNASSAY

TAKEN IN AUGUST, 1920, FROM JUST BELOW THE TETE ROUSSE CABANE

THE GLACIER HAD GREATLY CHANGED SINCE OUR ASCENT IN 1919 WHEN THERE WAS
A HUGE BERGSCHRUND (NOW CLOSED), WHICH, AS WILL BE SEEN FROM THE ROUTE
TRACED, WE HAD GREAT DIFFICULTY IN CROSSING

turned to rain, so being by this time well up on the Arpitetta Alp, we sought a large stone and lay down until 8.30, when the rain cleared off. Starting again, we reached the glacier at about 10.45, and an hour later were close to the base of the rocks by which we proposed to ascend to the pass.

By this time it was snowing hard, and the glacier was very slippery. The stones were obviously on the move, and the weather looked dreadful. Adolph wanted to push on, but Joseph and I knew the Hohlicht Glacier on the other side, and with the conditions as they were we informed him that we did not (as Joseph put it) intend to be killed. We exercised a wise discretion, as soon afterwards we got the full force of the storm, and eventually got back, wet to the skin, to Zinal, where, having no spare clothes, I had to go to bed. Next day the weather looked hopeless, so we left for Zermatt.

On Tuesday the 17th the weather cleared, so we went to the Trift Inn, and next day crossed the Triftjoch to Mountet. It was eighteen years since I had crossed this pass, and I was interested to do it a second time, but it was not very safe. We had a nasty fall of stones from the Wellenkuppe just as we were negotiating the bergschrund, but we moved so quickly that they all went over our heads, except one little one which hit Joseph's sack as he jumped. We arrived at Mountet at 8.10 A.M. in ideal weather, and looked forward to a bivouac next day. We got to Zinal in the afternoon, but, alas! the weather by evening was as bad as ever.

Thursday and Friday were very stormy, but Saturday was better, and we decided to start and to sleep out. Joseph arranged for a baggage mule, but it could not start with us, having another job on hand down in the valley. The man had promised to be back in time to arrive at the gîte at 6 P.M. I fortunately insisted that Adolph should wait and see he did come. Joseph and I started at 1.35 and walked quietly up to the alp, arriving at the Weisshorn gîte at 5 o'clock. The weather looked uncertain, great masses of mist driving along the range from the Rothhorn to the Weisshorn. The effect was often magnificent, sometimes a glimpse of a peak through the mist, looking like a patch of snow suspended in the air. It was extremely interesting and a very beautiful sight.

About 7.30 Adolph and the mule arrived. It turned out that, as I had expected, the hotel mule had not turned up by 4 P.M., and but for Adolph, who succeeded in getting the post-mule and post-boy conditionally on his early return the next morning, we should have been without provisions or blankets.

I may remark that I was much dissatisfied with the conduct of the hotel-keeper at Zinal.

We had supper in the dark, and turned in soon after. The weather was very cold but promised well for the next day.

We left our bivouac at 3.15, after having tipped the post-boy and pointed out to him that the 40 frs. we had paid for the mule would now be his, and that he must recover this amount from the hotel. He was rather surprised at the sum we had been charged.

We had a beautiful starlight night, and with the aid of a candle made our way down and over the hillside on to and over the moraine, reaching the Moming Glacier at 5 A.M., when we roped.

We were in good time, and at the foot of the rocks by 6 o'clock, on which we found the loose débris frozen hard all the way up. In fact, this route, except early in the morning, would be unsafe. The rocks are very broken and full of frozen fragments, and their condition quite justified our decision of the previous week not to attempt them late in the day.

We clambered into the bergschrund and out on to the rocks on the other side, climbing easily and rapidly. It was quite good going, everything being frozen hard. When we arrived at the big snow patch we crossed it at the lower end, and after negotiating somewhat steep rocks on the right (where we had a short halt and left a bottle containing a card with the date) arrived at the last rocks under the great snow arête. Here the obvious route was to have crossed over more to the right on to what would have been quite easy rocks had they been dry, but they were unfortunately covered with verglas, so we took to the rather nasty steep slabs on our left, and then found the only really difficult place of the climb. However, Joseph, by standing on Adolph's shoulders while I got into as safe a place as I could with the rope, overcame the chief difficulty, which was caused more by the thin coating of ice on the slabs. We both followed, and in a few minutes were at the foot of the last part of the climb. Here for the first time we ran into Sir Edward Davidson's route, and joined the peculiar snow rib which runs straight up to the col and which his party descended when making, in 1902, the first passage of the col. This, to our disgust, we found was all ice at the lower end and Adolph had to cut steps rather carefully. About a third of the way up we got snow, sometimes on the left and sometimes on the right of the rib, and made good progress, arriving at the col at 9.12, much pleased with our morning's work.

After a rest we (at 10.10) attacked the Schallihorn, and with



H. Preissman, photo.

THE WEISSHORN AND SCHALLJOCH

SHOWING PART OF ARETE ON THE OBER SCHALLJOCH ON RIGHT OF PICTURE. X

WEST OR ZINAL FACE



R. W. Lloyd, photo.

THE OBER SCHALLIJOCH

MARKED X

EAST FACE

Joseph making steps very rapidly we easily reached the summit by 10.50, and were back on the col by 11.12, having been some sixty-two minutes over the climb.

At 11.30 we proceeded over the Momingspitze, descending by an obvious rock arête to the upper slopes of the Hohlicht Glacier. This glacier, when I ascended it in 1906, was simply a somewhat steep walk, but like most glaciers this year it had changed very much, and to our disgust, as we had had to do a good bit of step-cutting in ice to get to it from the arête, we found it had formed itself into a great cliff of ice, which it was impossible to descend. There was nothing for it but to cut our way back to the lower end of the arête and try the glacier on its other side, which Joseph cheerfully informed me he had never known possible on account of the bergschrund. However, the bergschrund, though bad, proved, when we had cut our way down to it, feasible, and after a little difficulty we were soon descending the easy snow slopes, passing at a safe distance underneath the ice-fall. From here it is an easy though somewhat steep walk of some 600 ft. up to the arête near Pt. 3672, followed by a simple descent by the rocks to the Rothhorn Glacier, where we joined the Rothhorn route and arrived at the Trift Inn at 6 o'clock, tired, but well pleased with our expedition. The inn was more than full, and we congratulated ourselves that we were going on to Zermatt, which we reached in time for dinner.

The climb is a delightful one, and presents no serious difficulty if the party is early. We had intended to ascend by Sir Edward Davidson's line of descent, when making, in 1902, (by way of the Moming Glacier) the first crossing of the pass, but after a very careful survey with the glass we decided that it was unlikely we should be able to get through, as it was in very bad condition, and the ice-fall looked impracticable. For this reason we decided on the route by the rocks, feeling sure that we should be safe if we started early enough in the morning.

I am very greatly indebted to Sir Edward Davidson for suggesting the expedition, and for his kindness in reading over the paper itself, also to Mr. Priestman and Mr. Spencer for the use of their slides. Mr. Priestman very kindly went to a good deal of trouble over his slides for me.

[The peaks and passes of the ridge between the summits of the Zinal Rothhorn and the Weisshorn merit a short historical note which has been drawn up in consultation with Sir Edward Davidson.

(1) Zinal Rothhorn (4223 m.) was first ascended on August 22,

1864, by Leslie Stephen and F. Craufurd Grove, with M. and J. Anderegg, by the N. or Zinal arête.

(2) Le Blanc (3682 m.) was probably ascended on the same occasion.

(3) Ober Mominghorn (3968 m.—Dr. Dübi proposes the name S. Momingspitze, cf. *Clubführer durch die Walliser Alpen* (1921), vol. ii. 157 seq.) was first ascended on August 6, 1886, by Mr. (now Sir) H. Seymour King, with Ambros Supersaxo and Alois Anthamatten by the N. arête.

The first traverse from the Trift to Zinal was made on August 17, 1898, by Sir Edward Davidson with C. Klucker and Julius Lochmatter. The party, having ascended by Sir H. Seymour King's route, followed a long steep snow arête heavily corniced, and descended some difficult rocks to the upper plateau of the Moming Glacier, and thence crossed the Le Blanc ridge to Zinal.

(4) Moming Pass. This pass consists of two distinct gaps in the ridge, either of which can be crossed. The S. gap (3793 m.) is that originally crossed on July 18, 1864, by Moore, Walker, and Whymper, with M. Croz and Chr. Almer, and is approached on the Zinal side by the famous ice wall. The N. gap, which is reached from the Zinal side by a mixed rock and ice slope, is immediately at the foot of the ridge leading to the

(5) Momingspitze (3687 m.—or N. Momingspitze of Dr. Dübi's *Clubführer* cited above) which was probably first ascended by Herren Pfann and Christa on August 21, 1901. Sir Edward Davidson, when traversing the peak on September 18, 1892, found no traces of a previous visit.

(6) Oberschallijoch, or preferably Hohlichtpass (3745 m.), was first crossed on September 18, 1902, from Zermatt to Zinal by Sir Edward Davidson with Ulrich Almer and Joseph Pollinger. Mr. Lloyd's passage now described is the first in the reverse direction. It is stated in Studer's 'Ueber Eis und Schnee' that the first crossing of the Oberschallijoch was made on July 8, 1872, by the late Emile Javelle with Jean Martin and Elie Peter, but it is quite clear from a perusal of Javelle's account in his own 'Souvenirs d'un Alpiniste,' that he crossed the Moming Pass and subsequently turned the Momingspitze by the rocks of its S.W. rib, and then went up to the so-called Oberschallijoch with a view to ascending the Schallhorn. He thence descended, without completing the ascent, to Randa by the Hohlicht Glacier, instead of passing over the rock buttress of the Rothhorn, which divides the Hohlicht from the Rothhorn Glacier, and then descending the Trift route and valley to Zermatt, as Whymper's party did in 1864. This was the only novel part of Javelle's expedition. Jean Martin repeated the expedition on August 27, 1872, with the Misses Pigeon, Johann Schaller of Randa replacing Elie Peter, and 'A.J.' vi. 145 states that the line of descent had previously been taken on July 8 with Monsieur Javelle of Lausanne. The weather was very bad and the guides being un-

acquainted with the way to Zermatt by the Hohlicht and Rothhorn Glaciers kept to the left from the pass and descended to Randa by the buttress of the Schallihorn, between the Hohlicht and Schalliberg Glaciers, partly by an ice couloir much exposed to avalanches. The chapter 'Huit Jours dans le Val d'Anniviers,' 219 seq. in Javelle's 'Souvenirs' is quite clear as to the route followed, and there can be no doubt that Javelle did not cross between the Momingspitze and the Schallihorn, and that he did in fact cross the ordinary Morning pass.

(7) Schallihorn (3978 m.) was first ascended on July 20, 1873, by Mr. T. Middlemore, with Johann Jaun and Christian Lauener. They left Zinal 2.10 A.M., reached the top of the Morning Pass by the usual route, and then coasted round the Momingspitze to the Oberschallijoch and thence ascended the Schallihorn. Mr. Middlemore speaks of the Schallihorn as being well worth climbing, since from the Morning Pass the eastern view is spoiled by the Schallihorn and the western by the Rothhorn range ('A.J.' vi. 294-5). The Schallihorn was first traversed from the Oberschallijoch to the Schallijoch by the Hon. Gerald FitzGerald, with U. Almer and F. Boss and Sir Edward Davidson with C. Klucker and Jos. Imisch on August 14, 1900. They found on the summit a huge stone man probably built by Mr. Middlemore and Jaun on the first ascent. The late E. A. Broome with Alois Pollinger and another guide repeated in 1903 ('A.J.' xxxiii. 406) the ascent from the Schallijoch, and it is probable that Herren Christa and Pfann also made the traverse in the course of their 'Gratwanderung,' in 1901.

(8) Schallijoch (3715 m.) was first crossed on August 10, 1864, by J. J. Hornby and T. H. Philpott, with C. Almer and C. Lauener, from Zinal to Zermatt.

(9) Weisshorn (4512 m.). The upper portion of the S. or so-called Schalligrat was first followed on September 6, 1877, by Messrs. W. E. Davidson, J. W. Hartley and Seymour Hoare, with J. Jaun, Alois Pollinger, and P. Rubi; the lower portion on September 2, 1895, by the late E. A. Broome, with J. M. Biner and Ambros Imboden.

A traverse of the whole ridge from the Rothhorn to the Weisshorn was made (with a bivouac on the Schallijoch) on August 21 and 22, 1901, by Herren Hans Pfann and E. Christa (*Zeitschrift des D. und OE. A.V.* 1907.)

THE MOUNT EVEREST EXPEDITION.

BY J. N. COLLIE.

THE expedition started from Darjeeling on May 18, travelling to Tibet up the Chumbi Valley via Phari. The frontier was then crossed and Kampa Dzong reached on June 4. A fortnight later they arrived at Tingri Dzong, having travelled 300 miles in thirty days. The headquarters of the expedition were placed at Tingri. On the 23rd Messrs. Mallory and Bullock started for Mt. Everest, which lies some 40 to 50 miles to the S. of Tingri. They ascended a valley, the Rongbuk, that drains the northern slopes of Mt. Everest. Here they established a camp at 18,000 ft. On July 5 they ascended a peak over 23,000 ft. The coolies, however, who accompanied them were unable to reach the summit. During the time spent at this camp they were able to make a complete reconnaissance of the northern face and western arête of Mt. Everest. The northern face of the mountain is a forbidding precipice of 10,000 ft., and the arête appears also impracticable.

A word may here be said of the arêtes of the great mountain. There are three main ridges—the W. ridge, the N.E. ridge, and the S.E. ridge—that runs from Mt. Everest to Makalu (27,790 ft.).

The whole of the snows on the northern flanks of Mt. Everest drain into the great Rongbuk Glacier. This glacier is split into three—the main glacier, the eastern, and the western glaciers. The West Rongbuk Glacier drains the southern side of a great group of mountains (25–26,000 ft. high) that lie about 15 to 20 miles N.W. of Mt. Everest, and at the head of the main and the eastern glaciers is the great N.E. arête of Mt. Everest. Apparently from this side no easy route on to the N.E. arête could be found. From what, however, was discovered two months later, it is possible that the best route on to the comparatively easy N.E. arête may be up this East Rongbuk Glacier.

During the month that was spent by the climbing party in the Rongbuk Valley, the surveying party went W. and S.W. of Tingri, while Colonel Howard Bury went S.W. up the Kyetrak River to a large glacier, the Khómbu. To the W. of the Khombu Glacier lies the Pusi La (19,000 ft.), a native pass into Nepal. This was crossed into the Rongshahr Valley.

As time was getting on, and the reconnaissance of the

northern slopes of Mt. Everest had not revealed any easy route on to the mountain, the base camp at Tingri was moved on July 24, in order to investigate the nature of the approaches and possibilities of the eastern side of Mt. Everest.

The route chosen was down the Rongbuk Valley, which apparently after running N., at Chhobuk turns E., then bending to the S.E. it passes Rebu, finally joining the Arun River. Leaving the valley of the Rongbuk they crossed a pass, the Doya La, and established their new base camp in the Kharta Valley, at 12,300 ft. From the lower part of the Kharta Valley it did not seem at all likely that the glaciers at its head would lie near Mt. Everest, and only later was it found that the Kharta Valley, like the Rongbuk, bends round in a half circle, and that the sources of the East Rongbuk and the Kharta Glaciers lie just at the foot of the great N.E. arête of Mt. Everest.

The climbing party, therefore, left the Kharta Valley by a pass, the Langma La, and entered the Khama Valley that runs S.E. from Mt. Everest. Both in the Kharta Valley and in the Kama Valley they found a new vegetation and a new climate. The barren, dry, stony wildernesses of Tibet were left behind, and a luxuriant vegetation filled the lower parts of the valleys. The upper alps were covered with wild flowers of every different shade of colour. This was at the beginning of August, and the weather was at its worst. Although no serious climbing could be attempted, a large number of magnificent photographs were obtained of Mt. Everest, Makalu, and N 53, an outlier of Makalu. All these peaks, and the head of the Kama Valley, are shown in the photograph taken by the late Dr. Kellas last winter ('A.J.' xxxiii. 295). At the head of the Kama Valley, no promising approach to the N.E. arête could be seen. Cliffs of steep black rock, over which hanging glaciers discharge avalanches all day long, guard the mountain. The party, therefore, returned to the Kharta Valley, and as a last resource turned their attention to the upper Kharta Valley. On September 22 six members of the expedition arrived at its head and camped at 22,500 ft. Next day three of the climbers camped 'on the glacier below the N. col,' and on the 24th they ascended to a col 23,000 ft. between Mt. Everest and the first peak to the N., but they were driven back by a furious north-westerly gale, lasting for four days, and by intense cold. They, however, found 'the arête quite possible.'

From all the photographs we have of this arête the last 6000 ft. do not appear to present any insuperable difficulties.

Next season the attempt to climb Mt. Everest can at once be taken up at this point of 23,000 ft. at the head of the East Rongbuk Glacier. Let us hope that an easy way will be found, not from the Kharta Valley, but direct from Tingri up the Rongbuk Glacier. As far back as September 3 Colonel Howard Bury, in a telegram, says: 'The approach up the eastern branch of the Rongbuk Glacier to the col to the N. of Everest appeared a practicable though very long proceeding; but before it was possible to make any serious attempt to penetrate this valley the weather broke.'

But it would be a longer proceeding if the only approach to the Kharta Valley was by the route followed this year by the expedition. The only alternative route to Kharta is down the valley of the Arun, and it is very probable that in the early summer the swollen rivers would make this impossible.

The last piece of mountaineering was by Colonel Howard Bury, Mr. Wollaston, and Captain Wheeler; they returned from the head of the Kharta Valley by the Kama Valley, and the former crossed a col between Mt. Everest and N 53 at 21,500 ft., whence the southern face of Mt. Everest was seen for the first time. It was very steep and unpromising.

Headquarters at Kharta were left on October 5, and all members of the party then started for Darjeeling.

The expedition to Mt. Everest this year has been a great success. Those who know the difficulties of mountaineering above 20,000 ft. will appreciate how hard the climbing party must have worked. For three months they had very little rest. They have completed a reconnaissance round three sides of Mt. Everest that leaves little to be desired. The photographs that have been secured, especially those of Colonel Howard Bury, are of the highest interest, not only from an artistic, but also from a topographical point of view; a large area round Mt. Everest will be mapped by means of the photographic survey.

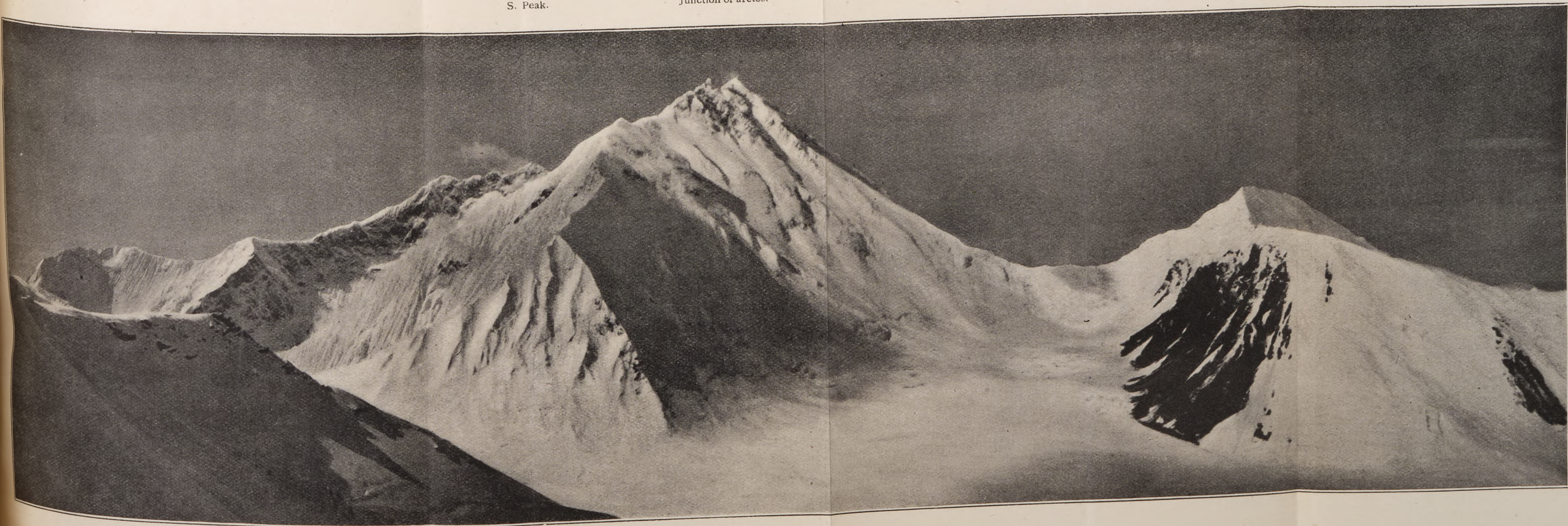
We yet have to learn the nature of the collections of botanical and zoological specimens, but most certainly they will be full of flora and fauna new to science. The geology also of the highest mountains in the world must be of the highest interest. And last of all, and of outstanding importance, is the survey of over 10,000 square miles of entirely new country. No European had ever travelled through it, and the only map was made at the order of a Chinese emperor, Kang Hsi, over 200 years ago. There still remains an unknown country farther to the W., a great stretch of mountain land lying N. of Nepal

S. Peak.

Junction of arêtes.

N. Col.

N. Peak.



VIEW FROM WINDY GAP.

North Col of Mt. Everest with N. arête leading to junction with N.E. arête. The apparent summit is the junction of the two arêtes and is about 26,000 to 27,000 ft. The actual summit lies far behind the apparent summit. In the foreground is the E. Rongbuk Glacier.

and S. of the Sang Po or Brahmaputra. At present we have no maps of it, it is unexplored and unknown and covers a large area on the maps. Perhaps next year some part of it may be visited by the surveyors of the expedition.

With the knowledge and experience gained this year, the 1922 expedition should bring back results even greater than those already obtained. The 1921 expedition was, in the nature of things, merely a reconnaissance; and when all the difficulties and unforeseen mishaps that always occur in preliminary explorations are taken into account, one must congratulate Colonel Howard Bury and all the other members of the expedition on having been so extraordinarily successful. Another fact that may be mentioned is that this first-rate piece of exploration into an unknown country has cost considerably less than any other expedition of equal importance.

Next year there will be a larger and stronger climbing party. They should, if all be well, be at the base of Mt. Everest two months earlier than they were this year. There is no doubt that June and July are finer months round Mt. Everest than later, after the monsoon has broken. Given good weather, there seems to be no reason why they should find insuperable difficulties in climbing along the N. and N.E. arêtes of the great mountain. The photographs show no difficult rocks, and no extremely steep ice slopes. Of all the great peaks, K₂, Nanga Parbat, Kangchenjunga, Makalu, Nanda Devi, etc., none have such easy access to their summits as Mt. Everest. Let us hope that next year the summit may be reached.

A TRAVERSE OF MONT BLANC.

BY GEORGE FINCH.

IT is a curious fact that, to this day, the southern slopes of Mont Blanc rank amongst the least frequented districts of the Alps. Mr. James Eccles who, with Michel and Alphonse Payot, first climbed Mont Blanc from the S. over forty-four years ago, remarked in a paper read before the Alpine Club,¹ 'it is singular that, notwithstanding their close proximity to a good mountaineering centre, the glaciers of the south-western end of Mont Blanc have been, compared with other parts of the chain, so neglected by Alpine climbers.' Of the

¹ *A.J.* viii. 409.

Brouillard and Fresnay Glaciers, the serious explorers of which may almost be counted on one's fingers, Eccles's words still hold good.

In its general outline, the geography of the southern slopes of Mont Blanc is simple enough, as a glance at the Imfeld-Barbey map will show. The western and eastern boundaries are, respectively, the Brouillard and Peuteret² ridges which converge in Mont Blanc de Courmayeur. The region enclosed by these two colossal ridges is bisected by the Innominata ridge, on either side of which a glacier flows down from Mont Blanc; the Brouillard Glacier between the ridge of the same name and the Innominata ridge, the Fresnay Glacier between the latter and the Peuteret ridge. Both glaciers are remarkable for their steepness and the extent to which they are broken up. From source to snout, the Brouillard Glacier forms an almost uninterrupted ice-fall, the Fresnay Glacier even more so: indeed, from afar the latter resembles the tumbling, foaming crest of a storm-tossed wave. To the S. of the Innominata lies a third glacier, the Glacier du Châtelet, but compared with the other two, it is insignificant in size and gentle in slope. All three ridges rise from the Val Veni in the form of great bluffs and cliffs. These, in the case of the Brouillard, soon narrow down to a well-defined ridge which, unbroken by any really prominent feature, rises steadily up to the two summits of Mont Brouillard (3966 and 4053 m. respectively). A gentle dip leads farther to the snowy Col Émile Rey (4007 m.), out of which steep cliffs, constituting a somewhat badly defined ridge, swing themselves up to the Pic Luigi Amedeo (4472 m.), whence a long ridge rising at a comparatively gentle angle culminates in Mont Blanc de Courmayeur. From beginning to end, the Brouillard ridge forms a vast crescent; curving N.N.W. in its lower half, it veers towards the N.N.E. in its upper, and terminates almost due N. of its source in the Val Veni. The precipitous, rocky south-eastern flank of the ridge between the Pic Luigi Amedeo and Mont Blanc de Courmayeur constitutes the uppermost portion of the S. face of Mont Blanc.

Totally different in character is the Peuteret ridge once it has become well defined as such in the vicinity of the summit of the Aiguille Noire de Peuteret, where the two ridges enclos-

² Spelt, for some unknown reason, 'Pétéret' on the Imfeld-Barbey unofficial map, but 'Peuteret' on the Mieulet official map of 1865 and in Alpine literature.

ing the Fauteuil des Allemands converge. Following a north-westerly direction, the Peuteret ridge carries two outstanding elevations, the Aiguilles Noire and Blanche de Peuteret, which are separated from neighbouring portions of the ridge by the deep clefts of the Col des Dames Anglaises and the Col de Peuteret respectively. Out of the former, tower the bold spires of the Dames Anglaises, enhancing the jagged outline characteristic of the ridge which, from the Col de Peuteret, in a final stupendous effort, soars up to Mont Blanc de Courmayeur.

In the Aiguille du Châtelet (2527 m.), the Innominata ridge at first makes rather a pusillanimous attempt to merit the description, then becomes lost in broad scree slopes from which emerge two ridges. One of these flanks the Brouillard Glacier, the other the Fresnay Glacier, and carries the Aiguille Joseph Croux and the depression called the Col de l'Innominata. At a point S. of the Innominata itself, these two ridges finally unite, enclosing between their southern flanks the little Glacier du Châtelet. N. of the Innominata, the ridge, running almost parallel to the Peuteret, dips into the depression known as the Col du Fresnay. Above the col it rises to a rocky summit beyond which lies another depression whence, in a futile attempt to connect with the Brouillard ridge, it rises abruptly in the direction of a point almost midway between the Pic Luigi Amedeo and Mont Blanc de Courmayeur, and after a last supreme endeavour to preserve its individuality in the shape of a huge, precipitous, red rock buttress, eventually loses itself in the rocky escarpments of the S. face of Mont Blanc at an altitude of about 4400 m.

The nomenclature of several portions of the Innominata ridge appears to me to require reconsideration. The Col du Fresnay of the Imfeld-Barbey map, I propose to call the Col Inférieur du Fresnay; its elevation is about 3610 m. The well-defined rocky summit above the col may be called the Pic Eccles (about 4050 m.), as I find the name has come to stay amongst the guides and porters of Courmayeur. To the depression N. of the Pic Eccles, the brothers Gugliermi³ have given the name of 'Col du Mont Blanc.' Mr. E. G. Oliver, however, rightly points out that this name should be reserved for a possible col between Mont Blanc de Cour-

* *Il Versante Italiano del Monte Bianco*, by F. Mondini, G. F. and G. B. Gugliermi, and E. Canzio, in the *Bollettino del C.A.I.* xxxv., should be consulted by all serious students of the southern slopes of Mont Blanc.

mayeur and Mont Blanc. Equally unsuitable, on the other hand, seems Mr. Oliver's suggestion, as a substitute, of the name 'Col du Brouillard' which, in complete analogy with the Col de Peuteret, ought to belong to the depression on the Brouillard ridge now known as the Col Émile Rey. The most fitting name, therefore, for our pass, the elevation of which is about 4020 m., would appear to be the 'Col Supérieur du Fresnay.'

In so far as successful attempts to reach the summit of the mountain are concerned, the history of the exploration of the S. face of Mont Blanc is soon told. Prior to 1919, only two parties met with success. On July 30, 1876, Mr. James Eccles,⁴ accompanied by Michel and Alphonse Payot, left Courmayeur, and gained a gîte in the rocks of the Innominata ridge, about midway between the Col Inférieur du Fresnay and the Pic Eccles, at about 3800 m. Leaving their bivouac at 2.55 next morning, they traversed the Pic Eccles into the Col Supérieur du Fresnay whence, descending steep rocks and an ice-filled couloir, they gained the uppermost level of the Fresnay Glacier. Three hours after leaving their bivouac, they crossed the bergschrund and began the ascent of the steep slopes of the great snowy couloir, which falls away towards the Fresnay Glacier from immediately above Point 4381 on the Peuteret ridge. Taking to the broken rocks on the left (ascending) bank of the couloir as soon as possible, they followed these without difficulty to their end. Another bout of step-cutting then brought them out on to the Peuteret ridge, up which they arrived on the summit of Mont Blanc de Courmayeur at 11.40 A.M. At 12.35 P.M., nearly ten hours after leaving their bivouac, Mont Blanc itself was under foot.

The only other successful expedition carried out before 1919 was that of Signor Gruber,⁵ with Émile Rey and the porter Pierre Revel, in 1880. Leaving Courmayeur on August 14, they bivouacked on some rocks near the Col Inférieur du Fresnay. Crossing the col next morning, they descended to the Fresnay Glacier and worked towards the foot of the great rock buttress immediately between the huge uppermost ice-fall of the glacier and the Aiguille Blanche de Peuteret.⁶ Late that afternoon, after most difficult climbing, they arrived in the Col de Peuteret, and thence followed the Peuteret ridge

⁴ *Loc. cit.*

⁵ *A.J.* xxiv. 679.

⁶ See illustration *A.J.* xxiv., facing 678; the buttress lies to the left of the white cross.

as far as Point 4381, when nightfall compelled them to bivouac a second time. Next day (August 16), keeping to the Peuteret ridge and very soon joining Eccles's route, they passed over Mont Blanc de Courmayeur and, four hours after leaving their bivouac, stood on the summit of Mont Blanc.⁷ This climb is usually referred to as if it were merely a variation of Eccles's route. It is true that they have in common the ascent to the Col Inférieur du Fresnay and that portion of the Peuteret ridge lying between Point 4381 and the summit of Mont Blanc, but otherwise the two routes differ to such an extent that Gruber's is worthy of being described as a new climb, and it was moreover the first complete ascent of the Peuteret arête.⁸

For the next thirty-nine years, the gaunt ramparts of the southern flank of Mont Blanc effectively repelled all further assault. It seemed almost as if the great white mountain had found fresh strength in the defeats suffered through the hard-won victories of Eccles and Gruber. It was not that Mont Blanc, during this long interval, remained a victor through lack of would-be conquerors. All who came were firmly repulsed. The more fortunate escaped whole in life and limb; from others the death-toll was ruthlessly exacted.

The spell was finally broken in 1919. On August 20 Messrs. Oliver and Courtauld, with Adolfe and Henri Rey and Adolf Aufdenblatten,⁹ bivouacked in the Col Inférieur du Fresnay. The following day they traversed round the Pic Eccles, close below its summit, and gained the Col Supérieur du Fresnay, whence they followed the continuation of the Innominata ridge until, driven over to the left by the vertical smooth rocks of its great final buttress, they were forced to climb the rocks of the S. flank of the uppermost Brouillard ridge. This they gained at a point between the Pic Luigi Amedeo and Mont Blanc de Courmayeur, but rather nearer the latter. In little over eight hours after leaving their bivouac they arrived on the summit of Mont Blanc, having thus opened a third route from the S. -

⁷ An interesting inscription, written by Signor Gruber and giving brief details of this formidable expedition, may still be seen pencilled on a beam in the Dôme hut, *vid* which the party returned to Courmayeur. From the general tone of this inscription, short as it is, can be gathered the strong impression which Mont Blanc had, on this occasion, made upon all members of the party.

⁸ For the history of this arête cf. *A.J.* xxiv. 690 *seq.*

⁹ *A.J.* xxxiii. 129.

Early in August 1921 the fourth successful ascent was effected by the famous Italian mountaineers S^r. G. F. and G. B. Gugliermi and Francisco Ravelli—names for ever entwined with the history of Mont Blanc—and a porter from Courmayeur. They followed in its essentials the route of Messrs. Oliver and Courtauld. Their first bivouac was in the rocks of the Innominata below the Col Inférieur du Fresnay, their second at the foot of the final great buttress of the Innominata ridge, while, on the descent, a third night was spent in the Vallot hut.

Towards the end of July 1921 I found myself in Zermatt, without a climbing companion—a lamentable state of affairs, due to trouble in Ireland preventing Forster from joining me as had been arranged. When Oliver and Courtauld arrived with the two Aufdenblattens after a successful traverse of the Dom from Saas, I was therefore more than pleased by their kind invitation to join their party. Theoretically, of course, I had no right to accept this, because I was out of training and had done nothing beyond walking half-way up to the Schwarzsee.

Getting into training seems to be a spectre which looms large in the minds of most climbers of to-day. Often I feel impelled to think that, at all events from the physical point of view and as far as more youthful climbers are concerned, this fantastic mental conception must be, to a great extent, the result of auto-suggestion. In spite of a sedentary occupation, wholly unrelieved by any active form of sport, I am always ready to start climbing by climbing, and not by indulging in a ramble. In this instance, moreover, the immediate programme in view was not too ambitious, our aim being merely to get, somehow or other, to Breuil. The Col Tournanche was chosen as a pass for the sake of its novelty, none of us having previously crossed it. Arrived in Breuil, Oliver and Courtauld went on to Courmayeur, whilst I returned to Zermatt to bring my luggage round to Courmayeur by rail. A few days later we were together on the Aiguille de Tronchey, with a keen eye to possibilities of a new route up the Grandes Jorasses. The great S. ridge of the latter, however, showed no breach in its formidable defences, but the Peuteret ridge of Mont Blanc appeared to be in such a first-rate condition that, could it but be gained from the Brouillard and Fresnay side, it would almost certainly 'go.' Talking matters over on our return to Courmayeur, we decided to repeat Eccles's route. The ascent of the Peuteret ridge *via* the Aiguille Blanche de Peuteret was ruled out on account of the dangerous condition of the Brenva

Glacier and of the Aiguille Blanche itself—a condition due to the huge rock and ice fall of November 1920.

On the following day, from a point in the road near the second refuge on the Italian side of the Petit St. Bernard, I carefully examined the S. flank of Mont Blanc. The descent from the Col Supérieur du Fresnay on to the upper basin of the Fresnay Glacier seemed feasible, but the bergschrund below Eccles's great couloir leading up to the Peuteret ridge appeared doubtful. The rocks showing through both to the left and the right of the Peuteret ridge, however, seemed to be as free from snow and ice as they were ever likely to be, while the ridge itself appeared to carry good snow.

On August 7 we left Courmayeur with four porters and two carriages bearing our kit, Oliver, Courtauld, and myself as far as the Alpe du Fresnay, shortly after leaving which we encountered our first difficulty in the shape of the unfordable torrent descending from the Fresnay Glacier. By means of two felled trees discovered in a wood nearby, we improvised a somewhat unstable bridge which most of us preferred to cross on all fours. Alfred Aufdenblatten boldly essayed to walk across, but not knowing the secret of keeping his eyes fixed on the bridge instead of on the water, lost his balance and only saved himself by a wild jump, which barely landed him on the far bank. Towards nightfall we gained the Gamba hut, situated on the Innominata ridge a little above the Aiguille du Châtelet.¹⁰

Next morning we left shortly after daybreak, ascending over the débris-strewn slopes towards the moraine on the left bank of the Brouillard Glacier, and took to this glacier at an altitude of about 2900 m., at the point where the moraine ends and the rocks steepen up towards the Innominata. The work in front of us now changed completely in character. Ropes and climbing irons were put on; Adolf and Courtauld took the lead; Oliver, Alfred, and I formed the second party, while the porters, roped together two by two, brought up the rear guard of our little army.

Our labours began at once. Huge crevasses, the upper lips of which were often disconcertingly high above the lower, soon forced us out towards the middle of the glacier, where

¹⁰ The original Gamba hut stood on the Fresnay side of the Châtelet-Innominata ridge. In the winter of 1919–20, however, it was wrecked by an avalanche, and from the débris was constructed the present hut, which stands on the ridge itself about ten minutes above the old site, at approximately 2530 m.

constant step-cutting was the rule. Progressing very rapidly Adolf cut small steps, upon which we improved, so as to make things easier for the heavily burdened porters. After much twisting and turning and some pretty ice-work, we reached a small plateau somewhere above Point 3091, where the Brouillard Glacier makes an heroic but rather unavailing effort to be level, prior to indulging in a mad tumble over a noisy 'Heisse Platte.' Here a half-hour halt was called for breakfast. We could now see right up to the head of the glacier, and Oliver pointed out to me the line of their ascent of 1919.

The choice of either of two ways up to the Col Inférieur du Fresnay now lay before us. We could follow the glacier, keeping more or less in the middle, or else traverse high up to the right across steep ice slopes leading down from the ridge of the Innominata. The latter route bore unmistakable evidence of having been recently swept by falling stones; débris on the glacier, however, testified even more generously to the fact that ice also falls, and in addition we could detect an abundance of bridgeless crevasses. We therefore chose honest step-cutting across the steep ice slopes. All set to work with a will, and progress was rapid. Dangers and difficulties ceased at a point somewhat below, and to the W. of, the Col Inférieur du Fresnay, where the glacier once more interrupts its headlong course to the valley by indulging in a small snow-field of moderate incline. No difficulty was offered by the final bergschrund below the col, into which we stepped at 10 A.M., nearly five hours after leaving the hut.

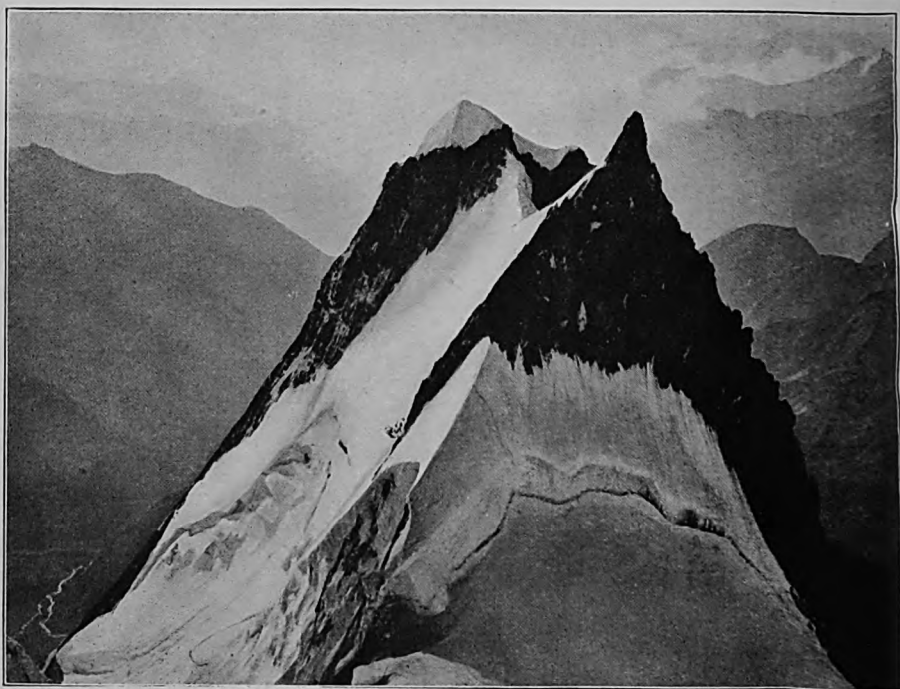
The Col Inférieur du Fresnay is a striking view-point from which the Innominata and the Aiguille Noire de Peuteret both show to extraordinary advantage. The descent from the col on to the Fresnay Glacier does not appear to be difficult, although the rocks are sometimes steep and certainly rather rotten.

After a rest of an hour and a half we once more got under way, and climbing up the ridge in the direction of the Pic Eccles, mounted over a short pitch of steep rock followed by an ice slope where heavy step-cutting was essential. This slope landed us on another diminutive snowy plateau, over which we made our way in the direction of the spur of rocks forming the W. ridge of the Pic Eccles, and on which, after crossing a bergschrund and cutting up an ice slope, we effected a lodgment. Just as my party gained the rocks, a loud clattering was heard from the slopes of Mont Brouillard. Quickly pulling out my camera from my coat pocket, I was in good time to take a



G. Finch.

ASCENDING PEUTERET RIDGE (about 4,500 m.).



G. Finch.

AIGUILLE BLANCHE DE PEUTERET
from halfway up couloir leading to Pt. 4,381 on Peuteret Ridge (about 4,150 m.).

photograph of one of the most gigantic stone-falls I have ever seen. For several minutes dense clouds of stone dust hung over the track of the avalanche, while many large blocks swept over the Brouillard Glacier, right across the line of ascent followed by the brothers Gugliermi on the occasion of their memorable crossing of the Col Émile Rey.

After a brief halt, for the porters to close up, we commenced our assault on the rocks ahead. The climbing, though occasionally very steep, was not particularly difficult, despite the treacherous nature of the rock and the downward slope of its stratification. Incidentally, it may be remarked that, though unreliable, the rocks of the Pic Eccles were certainly the best encountered during the expedition. Taking the utmost care to avoid dislodging loose stones which were sometimes of a formidable size, we made our way up towards the summit of the Pic. When still some distance below it, however, Adolf led out to the left on the Brouillard side, and after some healthy passages across ice-filled gullies we arrived in the Col Supérieur du Fresnay, without having actually passed over the top of the peak. The rocks on the Mont Blanc side of the col were gained at 2.30 p.m., and the several members of the party proceeded to select their couches for the night. It had been arranged that, at this point, two of the porters should return to the Gamba hut, but beyond depositing their loads, they made no attempt to move; indeed, they even threw out hints about preferring to stay with us till the following day. The polyglot imaginative eloquence of Adolf, however, soon persuaded them of the supreme folly of shivering in a bivouac when the seductive warmth and shelter of the hut were awaiting them. Their two companions were provided with blankets, as they were to remain the night and take down the sleeping-bags and excess kit on the morrow.

The Col Supérieur du Fresnay consists of a narrow snow ridge sloping off abruptly on one side to the Brouillard, and on the other to the Fresnay Glacier. To the E., beyond the Col Émile Rey (4007 m.), we could see a snow summit, probably Point 3885 m. of the Aiguilles de Trélatête. The height of our bivouac, therefore, must have been about 4020 to 4030 m. The great S. face of Mont Blanc falls away from the Brouillard ridge above, in slopes of broken rocks, which finally merge into enormously steep slabby precipices abutting on the Brouillard Glacier. The eye could follow the course of this glacier almost throughout its length. It is so grotesquely broken up that one wonders that it is possible to thread it. The uppermost basin,

still untrodden, I believe, by human foot,¹¹ and forming a little, almost level snow-field, is isolated by one or two formidable crevasses which cut right across the glacier from side to side. The W. face of the Aiguille Blanche de Peuteret, composed almost wholly of dark grey rock unrelieved by scarcely a single speck of snow, looks practically inaccessible. The route of the late H. O. Jones,¹² led by Laurent Croux, looks difficult and desperately dangerous from falling stones. Formerly, the Col de Peuteret was, so Oliver tells me, a snow-saddle from which either the Peuteret ridge or the rocks of the Aiguille Blanche could be gained with comparative ease. Now, however, as a result of the huge avalanche which fell away from the Peuteret ridge and the col itself in November 1920, the height of the latter has been considerably lowered, so that from our bivouac we could see beyond it right down to well below the summit of the Grand Flambeau. Great bergschrunds now bar direct access to either the Peuteret ridge or the Aiguille Blanche de Peuteret. From the lower rocks of the ridge itself much has fallen away, and they are now much steeper. Continual stone-falls, and the liberal traces left by them about the foot of the ridge, offered ample evidence of its present unstable condition.

It was impossible to find, or even make, a ledge which would accommodate the whole party; indeed, none proved wide enough to take more than one man, so that after each had selected his couch, we found ourselves well scattered over the mountain side. The two porters found a berth for themselves at the point where the snowy ridge of the col abuts on the rocks. My own sleeping-place was a level stretch of rock and snow ridge slightly higher up on the Mont Blanc side of the col, and on the very backbone of the Innominata ridge. About 3 ft. wide at the pillow end, but dwindling away to next door to nothing in the region of my feet, it had the advantage of length combined with the pleasant uncertainty as to which of the two glaciers, the Fresnay or the Brouillard, would have the honour of receiving my mortal remains should I lose my balance. The others deposited themselves on more or less inadequate ledges on the Brouillard side of the ridge. The nearest water supply was five minutes climbing distance down towards the

¹¹ The route followed by the brothers Gugliermi on the occasion of the only crossing of the Col Émile Rey does not touch upon this basin.

¹² *A.J.* xxiv. 678.



G. Finch.

COL AND AIGUILLE BLANCHE DE PEUTERET AND THE UPPER BASIN OF THE FRESNAY GLACIER
from Col Supérieur du Fresnoy.

Brouillard Glacier. On their journey back, skilfully balancing well-filled cooking vessels, Alfred and one of the porters (Henri Rey's son) performed some choice feats of rock-climbing.

There were still two hours of sunshine due before the last rays sank behind the Brouillard ridge, and these we utilised by changing our clothing (a lengthy process, as one hand was usually required for balancing purposes) and rearranging knapsacks, all superfluous equipment being put on one side for the porters descending next morning. In spite of all my efforts to reduce weight, my burden for the morrow's climb proved to be quite a respectable one. In addition to spare clothing, comprising shirt, storm cap, and gloves, I had climbing irons, two cameras, films for seventy-six exposures in airtight tins, and one day's iron ration for the whole party. This, consisting of 2 lb. of chocolate, the same quantity of sausage, and fifty cigarettes I had brought with me, feeling confident that the optimistic Adolf had made no provision as far as food was concerned for the possible eventuality of our being forced to bivouac a second time.

At half-past four, we had a frugal but welcome meal of hot soup. At five, the sun set behind the Brouillard ridge, and the inevitable chill of high altitude soon making itself felt, one and all prepared for the night. Alfred and I, finding our ledges somewhat too exposed for our liking, roped at either end of a 60-ft. rope, which we belayed over a projecting rock. Six o'clock saw us all settled down more or less comfortably. From all accounts, I seem to have spent the warmest night, and in view of this a few particulars as to my sleeping-bag may possibly be of interest. It was home-made: 7 ft. long and $3\frac{1}{2}$ ft. wide; it consisted of an inner bag composed of 3 lb. of finest grade eiderdown quilted in 1-ft. squares into the thinnest procurable balloon fabric, and an enveloping outer bag of similar material rendered airtight and damp-proof by a coating of 'Duroprene.' The total weight was just short of 5 lb.

I crawled into my bag. But soon the inevitable stone in the small of the back, of many a nocturnal episode in that wonderful Odyssey of the climber, 'Peaks, Passes, and Glaciers,' began its insistent ministrations. Unlike the heroes of olden times, however, I, deeming discretion the better part of valour, not only resisted the temptation to put the enemy *hors de combat*, but, by the simple expedient of curling round and clinging fondly to it with my hands, I made of it a comrade in arms whose tangibility did much to dispel the feeling of

insecurity born of the airiness of my perch. The last thing I remember was the crimson glory of the sunset touching the huge columns of storm-clouds which reared themselves aloft over the Grivola. I slept soundly. Twice only did I awake; once to find the lower portion of my anatomy dangling coquetishly over the Brouillard side of my couch; and again, stirred from a deep slumber by my instinctive grappling for an elusive hand-hold, to discover that I had transferred my legs to the Fresnay side.

About half-past four I was aroused by Adolf, rather blue about the gills but cheerful as ever, and obviously looking forward to a good day's work. He winked portentously, then, with a somewhat vacant stare, looked out beyond me towards the plains of Italy. Following his gaze, I soon understood. Over the Paradiso group vast thunder clouds still brooded; the sky was streaked with ominous, long, dark, fish-shaped masses, and I suddenly became aware that a wind had sprung up and was blowing past our bivouac in angry, fitful gusts. It seemed almost as if our climb were going to develop into a race against the approaching storm. I returned Adolf's confidential wink in kind as he passed me a generous cup of hot tea—a luxury which in similar situations, as a guideless climber, I had always had to procure for myself.

After a quickly swallowed breakfast, all was bustle in our camp. My boots, which I had lashed to a rock to make certain of not losing them (horrible thought!), were easily pulled on, for, though stiff, they were very large. By 5 A.M. everything was packed, sleeping-bags rolled up handy for the porters, and, roping in the same order as yesterday, we began the descent on to the Fresnay Glacier. This led down a steep couloir over extremely rotten rocks. The danger of inadvertently loosening stones was so great that we gave Adolf and Courtauld time to get round a corner out of harm's way before beginning our own descent. Once past the uppermost portion the slope of the couloir became more reasonable, and we were able to work down over a rib on one side till we reached a point a little above the head of the uppermost ice-fall of the Fresnay Glacier. Our way to the upper basin of the glacier led across a steep, ice-clad couloir followed by an ice slope which bore palpable signs of being frequently raked by falling stones and ice. Before we were ready to proceed, however, a stone fall of generous proportions clattered down into the couloir, isolated pebbles following at odd intervals. Nothing daunted, Adolf, the neatest, fastest, and most powerful step-cutter it has ever been

my good fortune to see at work, banged away across the danger zone in great style. The descent on to the Fresnay Glacier occupied in all barely an hour ; besides the extreme rottenness of the rock, we had met with no real difficulty and were well satisfied with our rate of progress.

Threading our way through the maze of ice blocks, the remnants of ice-falls from the huge bergschrund above, we crossed the basin, veering round and up towards the bergschrund at a point almost immediately below the rocks flanking the W. bank of Eccles's great couloir. The previous evening, we had decided that of the only two possible ways of surmounting the obstacle this was the safer. The alternative lay in crossing the bergschrund far over towards the Pic Eccles, at the only spot where it was more or less adequately bridged. But this would have entailed hours of step-cutting across the stone-swept slopes above the schrund before Eccles's couloir could be gained. At the point of attack, a flake had become partially detached from the bergschrund, and Adolf and Courtauld made rapid headway to the summit of the flake, which was, unfortunately, about 20 ft. short of the top of the schrund. Seeing that further operations promised to take time, we ensconced ourselves comfortably down below while Adolf brought his wits to bear upon the solution of the problem of overcoming 20 ft. of practically perpendicular ice. He was half-way over the obstacle when he encountered a bulge which threatened to come perilously near destroying his balance. But the last ounce on the right side was supplied by Alfred's ice-axe, after we had hurriedly joined Courtauld on his somewhat unstable perch. After that all was easy, at least as far as the others were concerned, for they seemed to find no difficulty in gaily walking up Adolf's well-cut steps. But what with a knapsack on my back and a camera in my coat pocket, I found more than a little trouble in balancing myself round the bulge. This obstruction, in all 60 ft. high, having been negotiated, a steep slope, sometimes snow, sometimes ice, intervened between us and our next objective, the rocks on the W. bank of Eccles's couloir. We mounted quickly, for scarcely a step needed to be cut, thanks to the plentiful pockmarks left by falling stones. On reaching the rocks, we found them almost unclimbable in their lower portion, and were forced out towards the middle of the couloir—a procedure which necessitated the crossing of a deep ice-clad stone chute. Thence we climbed over a small island of rocks all but submerged in verglas, from the upper end of which we were able

to traverse back and finally gain the rocks on the W. bank of the couloir, at a point where they were broken up and obviously easy to climb. None too soon, however, for hardly had the last man reached dry land when a stone fall clattered down the couloir behind us.

It was 8.30 ; we had been nearly three and a half hours under-way and for the best part of the time working at high pressure. On looking up towards the Peuteret ridge and Mont Blanc de Courmayeur, it appeared as if we had left all real difficulties behind us, and the optimists of the party prophesied being on the summit within a couple of hours. So, though the weather was fast becoming worse, we settled down light-heartedly to a second breakfast. The iron ration sausage was produced and attacked with gusto ; though of the same breed, it differed distinctly from the ordinary salami, which to me is somewhat reminiscent of cat and dog. Whatever its constituents may have been, it went down well, being as savoury as usual, but less salted and not so highly spiced. We allowed ourselves half an hour's grace, then stowed away our climbing irons and started up the rocks. They proved to be easy, though most unreliable. Here and there ice, covered more often than not by bad snow, took time to negotiate, but on the whole we made rapid progress. Shortly after ten we gained the end of the rocks ; slightly below us and to the right was Point 4381, where the snowy upper half of the Peuteret ridge begins. A little snow slope brought us out on the ridge itself, but not without free use of the axe. The snow was deep and very bad ; it lacked cohesion and concealed hard ice. Working along slightly on the Brenva side of the ridge, we at first found snow just sufficiently good to bear our weight in kicked steps, but in less than a rope's length it had become so bad that it had to be cleared away before the climbing irons would bite into the ice underneath. The spikes of my irons, fully three-quarters of an inch longer than those worn by the others, proved their value here. By merely stamping, I could force my foot far enough through the snow to grip the ice below. This was one of the several occasions arising on this expedition where the presence of an indifferent ice-climber would have proved not only troublesome but a real danger to the safety of the party, and a source of loss of much valuable time. After progressing in this manner for about a hundred metres, we got tired of threshing down the execrable snow, which seemed to get worse as we gained in altitude. Within easy reach both to the left and the right were rock ribs, which offered a less

tedious means of advance. A traverse of about thirty metres across the steep western flank of the Peuteret ridge brought us on to one of these ribs, the rocks of which soon showed themselves to be exceedingly rotten. Once more the climbing irons were removed and placed in our knapsacks. Oliver, at this point, had the misfortune to lose his axe; he placed it on a ledge where it lost its balance and fell down in a few stately bounds towards the Fresnay Glacier. It was while watching the axe disappear that I realised for the first time the enormous general steepness of the ground upon which we were climbing.

It now looked as if rocks could be followed practically all the way to the summit—a relief for which we were duly thankful, having had quite enough of snow. There was some difference of opinion as to the best line of ascent up these rocks; but, on the whole, there seems to have been little in our respective choices, for Adolf and Courtauld, whose route converged with that of our party from time to time, always succeeded in maintaining a lead of one or more rope's lengths. The climbing was difficult, and throughout extreme caution was necessary, on account of the unreliability of the rock. Occasionally, a belt of almost vertical red rock of a fair degree of firmness would crop up, but even this was invariably crowned with the rotten dark brown variety. Nevertheless, we climbed quickly, for while still 200 metres below Mont Blanc de Courmayeur, swirling mists practically obliterated all view of our surroundings, and it was evident that, if we were not soon to find ourselves in a critical situation, every minute gained was precious. The rocks came to an end about thirty metres below the summit of Mont Blanc de Courmayeur, and only a slope covered with the usual pernicious snow lay between us and safety. Adolf, trusting more to his climbing irons and to gentle treatment of the snow than to his ice-axe, climbed rapidly up to immediately beneath the cornice, cut himself a good step, and with a few powerful strokes hewed a channel through which he was speedily followed by Courtauld. While we were putting the finishing touches to the donning of extra clothing, in preparation for the cold weather up aloft, Adolf's stentorian voice shouted down a cheery 'Come along!' Looking up, I could just barely make out his well-muffled-up head framed in the notch in the cornice. Then he disappeared.

At 1.15 P.M. we, in turn, stepped through the cornice on to Mont Blanc de Courmayeur, to be greeted by a high and chilly wind. Adolf and Courtauld were already out of sight, though they were certainly not far away, for the jingling of their axes

against the rocks of a gendarme close by was audible above the sound of the gale. The mist was so thick that we could not see each other at rope's length. Adolf's tracks led off along the crest of the ridge towards Mont Blanc. Having painful memories from last year, however, of what this ridge could be like in stormy weather, I forsook his tracks and plunged down on to the Trélatête side, in the hopes of there finding more shelter from the icy blast. In view of Oliver's axeless condition this involved step-cutting ; but, on looking back after having cut about twenty steps, I saw him coming along as nonchalantly as if he were on a London pavement, so immediately gave up further cutting and relied upon climbing irons alone. In this way we skirted round the bases of three or four rocky outcrops, and regained the ridge at about its lowest point between Mont Blanc and Mont Blanc de Courmayeur. A little farther on we found the other two, who were inclined to mistake a small snowy hump for the summit of Mont Blanc. To avoid the wind, we now crossed over on to the Brenva side of the ridge, and traversing diagonally upwards found tracks leading up from the Mur de la Côte. These were followed to the summit, where we arrived at 1.45 p.m., having been eight and three-quarter hours underway from our bivouac.

The state of the weather precluded descending by either the Rochers or the Dôme route, and we contented ourselves with going down directly to Chamonix. Being the only member of the party with first-hand knowledge of the Grands Mulets route, I was deputed to show the way. The descent was uneventful, except for Oliver's spraining his ankle, and for the fact that my pigheadedness in refusing to follow the tracks brought us out to the Pierre à l'Échelle, which route, I have since learnt, has been recently discarded in favour of the Montagne de la Côte.

This narrative would be incomplete were it brought to a close without expressing my admiration for the professional members of the party. Adolf and I were not unknown to each other, for twelve years ago, on a stormy September day, we had stood together on the summit of the Lyskamm. Since then, he has joined that select coterie of first-class guides whose number can almost be counted on one's fingers. He has climbed Mont Blanc by nearly every conceivable route, and thus knows the mountain better than any other living guide. I need say little of his prowess either on ice or on rock ; he is first-rate on both. Last, but not least, he is an excellent companion, ever eager to be doing, and ready to put every

ounce of energy into any problem upon which he embarks. Alfred, who was serving only the second season of his apprenticeship, is fast following in his brother's footsteps. He too will, sooner or later, become a first-class guide. Four Courmayeur porters accompanied us up to the Col Supérieur du Fresnay. They carried heavy loads, but through all the trying situations that arose, they preserved their good humour and determination. Their conduct was admirable.

Note.—Those interested in photography may like to have the following particulars of my photographic equipment. I carried two cameras; the first a quarter-plate roll-film Ensign fitted with Compur shutter and Zeiss Tessar lens $f/4.5$, $F = 10.5$ cm.; total weight, including case, about 2 lb. My second camera was a Goerz Tenax roll-film, VPK size, fitted with Compur shutter and Goerz Dogmar lens $f/4.5$, $F = 7.5$ cm.; weight, 8 ozs. Three-quarter plate spools of twelve exposures each, and five VPK spools of eight exposures each (Kodak non-autographic speed film), were used. Two films were spoilt through omitting to wind the film after exposure. The remainder were satisfactory. The spools were packed separately in airtight and moisture-proof tins. No light filters were used.

THE FIRST WINTER ASCENTS OF THE VALLAISAN
SUMMITS OVER 4000 M.

COMPILED BY MARCEL KURZ.

[Monsieur Marcel Kurz, the Swiss topographical engineer, is good enough to supply the following notes of first winter ascents. His own experience is considerable, as he has himself ascended, in winter, the summits marked *. His MS, which will be available at the A.C., contains notes of the principal attempts in which the summit was not actually gained, and of other completed ascents].

1. *Grand Combin* * (4317 m.).

F. F. Roget and Marcel Kurz with Maurice Crettez. March 31, 1907. Left Cabane Panossière 7.15; on ski to the foot of the Col du Meiten (10.55–11.15); Col du Meiten 11.45; Combin de Valsorey 14.30; Grand Combin 15.30–15.40. Back at Panossière 20.00. Excellent conditions. Rocks absolutely dry.

2. *Dent Blanche* * (4364 m.).

F. F. Roget and Marcel Kurz with Maurice and Jules Crettez, Louis Theytaz and Léonce Murisier. January 13, 1911. Left Bertol 6.00; on ski to the W. foot of P. 3714 (9.15-9.45); S. arête 10.10-11.00; P. 3912, 11.25; S. arête above the big gendarme 13.00; summit 15.30. Resumed ski at 20.30 and back at Bertol by moonlight. It snowed nearly all day on January 10, but the mountain was in good condition. Weather a little uncertain and misty at intervals. Moderately cold.

3. *Ober Gabelhorn* * (4073 m.).

Marcel Kurz with Joseph Knubel. February 3, 1920. Left Hotel Trift 4.45; on ski by the Trift Glacier to the snowy shoulder N.E. of the Wellenkuppe (8.45-9.20); Wellenkuppe 10.10; summit Gd. Gendarme 10.50-11.05; summit Ober Gabelhorn 12.50-13.10; Gd. Gendarme 14.00-14.10; Wellenkuppe 15.10-15.20; Trift 17.10. Notwithstanding the snowstorms of January 31 and February 1, the mountain was dry, except for the final arête. Two portions of the arête between the Wellenkuppe and the Ober Gabelhorn were hard ice and we found there the previous summer's steps. Weather uncertain in the morning with a disagreeable wind, fine after 11.00. Very moderately cold.

The first winter ascent of the Wellenkuppe was made on January 19, 1893, by Mr. Sydney Spencer with C. Jossi and Ad. Schaller.

4. *Zinal Rothhorn* * (4223 m.).

Marcel Kurz with Théophile Theytaz. February 7, 1914. Left Mountet 7.20; on ski to Le Blanc (9.15-9.40); Epaule (4065 m.) 10.30-10.35; summit 12.30-13.00; skis 14.55-15.05; Mountet 15.45-16.20; Zinal 17.40. Mountain in perfect condition. It had not snowed for three weeks. Weather superb and absolutely calm.

5. *Weisshorn* (4512 m.).

L. F. Ryan with Alois Pollinger, Joseph and Raphael Lochmatter. January 10, 1902. From Randa to the Weisshorn hut in 7 hr. Next day, left at 6.30. Breakfast place 11.30. Up to here snow powdery and deep. Passage of the rocky arête in 55 min. Rocks dry. Final arête nearly

all ice. Last 2 hrs. continuous cutting. Summit 14.50. Weather superb and absolutely calm. Rocks 15.50; breakfast place 16.35; hut 18.05.

6. *Bieshorn* * (4161 m.).

The guides Pierre Cotter, Jean Genoud, Jean Epiney and Théophile Theytaz, December 22, 1912, succeeded in making on ski the first winter ascent, from Zinal in 12 hr. by the Roc de la Vache, the Col de Tracuit and the Tourtemagne Glacier.

7. *Dent d'Hérens* * (4180 m.).

(1) Mario Piacenza with G. B. Péliissier and G. Carrel. January 16 (or ? 9), 1910. On the 15th left Oyace (Valpelline) at 7.00 on raquettes. Arrive Rifugio Aosta (about 2800 m.) at 20.00. On 16th left refuge at 7.00 (powdery snow); Col des Grandes Murailles 10.30; summit 13.00-14.00. Weather superb and calm (-15° C.). Returned by same route reaching Rifugio at night.

(2) Herbert Hafers de Magalhaes with Adolf Schaller and Viktor Biner. February 28, 1918. From the Schönbühl hut on ski to the foot of the Tiefenmattenjoch. Ascended by cutting to the col, then on crampons by the arête. This took scarcely any longer than in summer; $3\frac{1}{2}$ hr. for the ascent and 3 hr. for the descent.

8. *Matterhorn* * (4482 m.).

(1) Vittorio Sella with J. A., L. and J. B. Carrel. March 16-18, 1882. After two attempts in February (in the course of which the Italian hut was reached) the party left Breuil on March 16 at 23.00, reached the Glacier du Lion at 3.00 (on 17th) and the Col du Lion at 6.00. At 10.00 they arrived at the Pic Tyndall ('without extraordinary difficulty'); summit 14.00 (rocks dry). Traverse and descent very easy to the shoulder (rocks absolutely dry). Below the shoulder more snow than usual. Arrived at the old hut at 19.30. Descended (on 18th) to Zermatt. On 19th returned to Breuil by the Théodule. Temperature very supportable, weather splendid.

(2) Charles Simon with Alex. Burgener and Alois Pollinger (father). March 27, 1894. The party left Schwarzsee at 1.00, ascended the Furggletscher and, following more or less the 'old route,' mounted almost directly to the old hut (8 hr.).

On the shoulder the steps cut the preceding summer were quite visible and much facilitated the ascent. From there to the summit, rocks almost dry. Summit 18.10-18.30 ('warm and wind free'). Rapid descent. Cold very severe after sunset. Old hut 16.30; Schwarzsee 20.20.

9. *Breithorn* (4171 m.).

Robert Helbling, Eduard Wagner and Hans Biehly. January 6, 1899. Left Schwarzsee on ski at 3.20; Piano Rose 8.0; by the arête to the Gobba di Rollin (10.15) which was all ice. Left skis on Plateau du Breithorn. Arrived on summit in shirt sleeves. On the descent ascended the Petit Cervin. Back at Schwarzsee 18.20.

10. *Pollux* * (4094 m.).

Alfred v. Martin and Karl Planck. March 7, 1913. From the Bétemps hut, on ski, by the Schwärze Glacier and the Schwarztör.

11. *Castor* * (4230 m.).

Alfred v. Martin, K. Planck and Heinz v. Roncador. March 5, 1913. From the Bétemps hut, on ski, by the Zwillingen glacier and the Felikjoch.

12. *Lyskamm* (4538 m.).

Vittorio, Corradino and Alfonso Sella with J. J. Maquignaz and P. Guglielmina. March 22, 1885. Left hotel on Col d'Olen (2865 m.) 1.00, and gained Lys Glacier without stopping at Cabane Gnifetti (3647 m.). Crossed S. arête of Lyskamm above Il Naso and so reached foot of Cresta Perazzi which was followed to the summit.

13. *Mont Rose—Pointe Dufour* (4638 m.).

Vittorio Sella with J. J. and Daniel Maquignaz and Battista Aymonod. January 26, 1884. On the 25th the party came from Breuil by the Théodule, bivouacked under tents on the Untere Plattje. Weather calm (-14° C.). On 26th left at 4.00. Powdery snow to 3800 m., then hard. Sattel 11.30; summit 13.30 (-16° C.). Back at the bivouac at 17.30. After a halt of 2 hr. left by lantern light and made a second bivouac under a large rock on the moraine, at the junction of the lower

Théodule Glacier with that of Petit Cervin. Furious wind (-8° C.). On 27th descended to Zermatt by the Gorner glacier and the Riffel. On 30th, after two days of tempest, returned to Valtournanche in 18 hr. by the Théodule.¹

On February 19, 1889, the four Sellas, with Daniel and Baptiste Maquignaz, and the porter Gamba traversed Monte Rosa (ascent by Cresta Rey). Times—from Cabane Gnifetti to summit, $9\frac{1}{2}$ hr.; to Sattel, $2\frac{1}{2}$ hr.; to Gorner glacier, 4 hr. (much fresh snow); traversing glacier, 4 hr. Forced to bivouac on Riffel.¹

14. *Strahlhorn* * (4191 m.).

H. Hoek and E. Schottelius. December 31, 1901. Left Fluh 6.10. On ski to 50 m. below Adler. Adler 11.45, then with crampons to summit 14.00. Descent to ski in 45 min., then a marvellous descent on excellent snow.

15. *Rimpfischhorn* * (4203 m.).

Hermann Woolley with Gabriel and Joseph (junior) Taugwalder. January 17, 1893. On foot by the ordinary route of the Rimpfischwänge. Left Zermatt at midnight. Summit 12.30–13.00. Zermatt 18.30. Very fine weather all day, but too cold (-21° at Zermatt). Very deep snow in the Findelen valley, but good on the mountain itself.

16. *Allalinhorn** (4034 m.).

A. Hurter and Max Stahel with Oscar and Othmar Supersaxo. April 1, 1907. From Saas Fee on ski by the Langenfluh and the Fee glacier to Feejoch. Thence on foot to summit. Mountain very bare. Much cutting. Ascent 12 hr. Descent 5 hr.

17. *Alphubel* (4207 m.).

Alf. V. Martin and Hermann Rumpelt with Oscar Supersaxo. March 29, 1910. After an attempt on 27th as far as the Fee Kopf (3912 m.) by the Langenfluh, the party on 29th gained on ski the Alphubeljoch in 9 hr. from Saas. They ascended a further 200 m. on ski and reached summit on foot. They crossed Alphubeljoch at 2.30, reaching Zermatt in about 3 hr.

¹ [Daniel Maquignaz more than once told me of the terrible hardship and labour incurred on these expeditions.—J. P. F.].

18. *Täschhorn* * (4498 m.).

Marcel Kurz with Joseph Knubel. February 7, 1920. Left Täschalp 8.15 (moonlight). On ski to the foot of the Weingarten moraine (4.05–4.15); then on crampons by the Weingarten glacier. Reached about 3700 m. (7.40–8.30) the rock ridge leading to the Mischabeljoch (9.40–10.15). Summit 12.45–13.20. Täschalp 17.00. Raquettes were used on the Weingarten glacier, the only place where the snow was not absolutely hard. General conditions excellent, but very cold Bise on the arête. At 8.00 (3700 m.) registered -22° C. which 'is the lowest I have observed on high mountains'—M. K.

19. *Dom* (4554 m.).

Sydney Spencer with Christian Jossi and Adolf Schaller. January 13, 1894. On the 12th ascended without difficulty to the Festi hut. Left hut 4.30; powdery snow very deep on the Festi glacier, many crevasses. Foot of Festijoch 9.30. Ascent by the N.W. arête which needed much cutting. Cold very severe, in spite of the calm weather. Summit 15.05–15.30. Returned to the hut (20.30) by moonlight. Weather perfect, but conditions bad.

20. *Lenzspitze* (4300 m.) and *Nadelhorn* (4334 m.).

H. Rey and — Gelpke with Heinrich Supersaxo. March 25, 1918. From Mischabel hut in 6 hr., by E. arête to the summit of Lenzspitze. From there, in 1 hr. 25 min. to Nadelhorn. Returned to hut in 1 hr. 40 m. by the Windjoch.

21. *Stecknadelhorn* (4235 m.). *Hohberghorn* (4226 m.).
Dürrenhorn (4035 m.).

Hans Fritsch with Othmar Supersaxo and Gustav Imsenge. March 5, 1921. From Mischabel hut (reached the day before in 4 hr.) 5.15; Windjoch 7.30. Descent to foot of Hohberg pass on Ried glacier (snow frozen hard to here), then up the steep snow couloir to pass (powdery snow knee-deep, sometimes deeper). Thence over the S.E. ridge to summit of Dürrenhorn (noon); back to pass 20 min. Over the slightly iced N.W. ridge to Hohberghorn about 3 hr., and to the saddle between that and Stecknadelhorn; snow ridge was hard and good going. Stecknadelhorn climbed from the saddle by the W. ridge 4.30,

and the summit of the Nadelhorn reached 5.40. Return over the Windjoch to the hut 7.40 P.M. Conditions generally very good and summerlike.

22. *Weissmies* (4081 m.).

Alf. V. Martin and Hermann Rumpelt. March 25, 1910. Left Hotel Weissmies 5.00; on ski to the Mellig glacier (8.00); summit 14.00; Hotel 16.45. Effective time: ascent 8 hr., descent 2½ hr.

23. *Laquinhorn* (4005 m.).

H. Rey and Gelpke with Heinrich Supersaxo. March 22, 1918. Left Hotel Weissmies 8.15; ascended by W. arête; summit 13.25. Descended in 3 hrs.

24. *Fletschhorn* (4001 m.).

Angelo and Romano Calegare and G. Scotti. January 1, 1914. On December 31, 1913, bivouacked at Hohmatten (1904 m. in Laquinthal). Left Hohmatten 4.00. Up to Fletschhorn glacier three porters preceded the party to break trail. At 13.00 porters descended. At 14.45 reached Fletschjoch (3673 m.). Thence to summit and back to col. Left col about 18.00. Descent by moonlight to Hohmatten 23.30. On foot throughout, splendid weather.

IN MEMORIAM.

EDWARD THEODORE COMPTON.

1849-1921.

By the death of Edward Theodore Compton the Alpine Club has lost both an experienced mountaineer and a distinguished Alpine artist.

Compton was born at Stoke Newington on July 29, 1849. Already at an early age his talent for painting was manifest, for, when fifteen years old, he was awarded a prize for a painting entitled 'Moonlight on Derwentwater.'

He first visited the Alps in 1868, and in the following year spent six months in Switzerland with his brother, W. C. Compton, and climbed the Titlis, his first ascent above the snow-line. This trip seems definitely to have determined his career as an Alpine painter; he went on to Munich to study art during 1869-70. In 1870 he

visited the Bavarian Highlands, where he eventually made his home, as well as the Austrian Tirol and the Dolomites. In 1872 he married a Bavarian lady from Munich, spending his honeymoon in the Alps where, from the top of the Pizzo Bianco, at Macugnaga, he watched the Pendlebury ascent of Monte Rosa. In 1874 Compton settled down for his life's work at Feldafing, on the Starnberger See; he built his studio in 1877 and a year later his house, in which he lived till his death on March 22, 1921, in his seventy-second year.

He joined the German and Austrian Alpine Club in 1879, and in 1880 was elected a Member of the Alpine Club.

Although the Swiss and Austrian Alps, which he knew by heart, were in a special degree his happy hunting-ground, he made many climbing and sketching tours in various parts of Europe, including Scotland, Spain, Norway, Corsica, Italy, the Carpathians, the Julian Alps, etc. He climbed for many years with such well-known mountaineers as Karl Blodig, Ludwig Purtscheller, Theodor Christomannos, Emil Zsigmondy, and others, and of our own members, specially George Yeld.

It was with Blodig that Compton did most of his big ascents; between 1898 and 1914 scarcely a summer passed without the two joining forces for a climbing tour in the High Alps. In an obituary notice in the 'Mitteilungen des Deutschen und Oesterreichischen Alpenvereins' of March-April 1921, Blodig speaks of Compton's climbing powers and knowledge of mountain craft, as well as his indefatigable industry in his work while on tour. Few who admire his pictures realise the circumstances in which they were accomplished; the original sketch was often made after eight or ten hours' hard going over moraine, glacier, and rock; returning to the hut or bivouac in the late afternoon, while his companions lay down to rest, Compton would paint on till the last moment, while the effect he desired to produce was fresh in his memory.

Amongst his many ascents might be mentioned :

- 1878. First direct ascent of Zugspitze from the Höllenthal.
- 1882. First ascents of Torre di Brenta and Cima Brenta Bassa, and new routes on Cima Tosa and Cima di Brenta.
- 1883. Expeditions in Corsica with F. F. Tuckett. Various ascents in Brenta Group. 'A.J.' xi. 307.
- 1886-7. Expeditions in Adamello Group and Dolomites, including first ascent of Fermedathurm.
- 1892. First ascent of Tour de St. Ours (with G. Yeld). 'A.J.' xvii. 180.
- 1905. An ascent and first descent of E. face of Aig. Blanche de Peuteret. 'A.J.' xxiii. 115.
- 1908. First ascent of highest point of Rocher du Mont Blanc. 'A.J.' xxv. 358.
- 1909. Several new ascents (with Blodig) round the Tübingen Hut.

I first met Compton at Saas Fee in 1907, where I was climbing with his brother. He came and stayed with us in N. Wales in 1908

From 1883 onwards Compton regularly illustrated the publications of the 'D. and Oe. Alpenverein' as well as many well-known Alpine works, such as Zsigmondy's 'Im Hochgebirge,' Purtscheller's 'Ueber Fels und Firn,' Lendenfeld's 'Aus den Alpen.' In order to familiarise the multitude with the mountains he loved so dearly, he did not disdain to respond to the many calls of publishers to furnish them with his sketches for illustration as picture-postcards. One of his patrons was the late Archduke Franz Ferdinand, with whom he frequently stayed at his Bohemian shooting-lodge and who was a great admirer of his paintings.

Compton's work was better known in Germany and Austria than in this country. His second son, Harrison Compton, follows in his father's footsteps, and in 1909 they held a joint exhibition at the Fine Arts Gallery in New Bond Street, which attracted much attention.

In 1919 Compton celebrated his seventieth birthday at Feldafing, a notice of which appeared in the *ALPINE JOURNAL*, March 1920. In August of that year he ascended again the Gross Glockner; it was his ambition, if alive and well, to ascend a snow-peak at the age of seventy, and those who were with him then said he went more like a man of fifty than seventy. It was, alas, his last climb.

Compton was a simple-natured man and a very lovable character. He had the rare quality of ready sympathy with others' interests, and seemed always out to find the best in anyone he came across or was associated with. I never heard him say an ill-natured thing or speak disparagingly of anyone. An intense lover of nature in all its forms, he was a most delightful companion, with a keen sense of humour and full of stories and experiences. He was a man, indeed, in whom there was no guile, and those who knew him feel that a friend has gone from them who cannot be replaced.

J. W. WYATT.

In August 1892 it was my good fortune to find E. T. Compton at Cogné, and to spend some days on the mountains in his company. I have seldom met with a more genial companion or a better mountaineer. He quite won my heart with the unobtrusive courtesy with which he accommodated himself to my somewhat laboured gait, for I was fresh from England, while he was in perfect training.

We went up to the Monei chalets for the night. It was a beautiful evening, and I had the pleasure of watching Compton sketch the peak of the Herbetet as well as the Roccia Viva and the Becca della Patienza. His drawings of them are amongst my most cherished possessions. On the morrow we made the first ascent of the Tour St. Ours, an excellent view-point, defended by an ice-slope which tested François Pession's powers as a step-cutter. We afterwards crossed the Col de Monei, and betrayed by thick



HOWARD BARRETT.

mist descended much too far, and had to climb back to the Piantonetto Refuge; it was provoking, but Compton accepted the annoyance with genial good temper. The next day the guides and I climbed the Becca della Patienza, while Compton remained on the Roccia Viva glacier to sketch. When we returned and he showed us the beautiful drawing which he had made, and which has for many years faced me at breakfast without outlasting its welcome, it was very pleasant to see the enthusiasm of the guides, and I think Compton was touched by their appreciation.

The next day we were without provisions, as our porter, who had been sent down to the Val d'Orco, lost himself. However, we improvised a breakfast of milk and polenta at the Muanda di Teleccio. The Piantonetto Valley pleased Compton much, and one particular spot he described as just the position for a painter's camp. I still remember the skill with which he extracted quite a choice meal from the unpromising kitchen of a little inn at Locana. We then rode down the Val d'Orco to Pont, and the next day crossed the Col de Bardoney to Cogne. I hoped to have shown him that end of the Cogne group, but storms of rain burst upon us and we were well drenched before we reached Cogne.

The next day Compton left me, to my great regret; but I still cherish the memory of those days, for they are, thanks to him, amongst the pleasantest of many pleasant recollections of the mountains of Cogne. He was a man whom to accompany was to love.

G. YELD.

HOWARD BARRETT.

1842-1921.

HOWARD BARRETT was one of those fortunate men whom age passes by. His fresh face, with masses of grey hair, his slight, alert figure, his keen, unspectacled eyes, a charming breeziness of manner, were so striking that one is quite surprised to see that he was nearly eighty. May time continue to treat as lightly some others of us!

He was elected to the Club in 1879, and to the Committee in 1907, and, to the very last, retained the keenest interest in its doings. Three carefully written-up little books lie before me. They give in outline journeys from 1872 onwards, and are an extraordinary record for a busy man who could not spare more than three or four weeks in the year, a part of which, indeed, was often devoted to his family. His serious climbing commenced in 1876 with the Jungfrau and some ascents in the Zermatt district. His record includes (among other expeditions): In 1878, Aletschhorn, Monte Rosa, and Dom; in 1879, Wetterhorn, Mönch, Weissmies, Strahlhorn, Col du Géant; in 1880, Finsteraarhorn, Fletschhorn, Rimpfischhorn, Monte Rosa; 1881, ascents at Arolla, Mt. Blanc (Grises

route); 1882, in Oberland; 1883, in Oberland (Trift and Belap districts), Gabelhorn, Weisshorn; 1884, Eiger, Blümlisalp, Matterhorn (with P. Dangl alone), Allalin- and Nadelhorn; 1885, Moine, Tacul, Blaitière, Colon, Pigne, M. Blanc de Seilon; 1886, in Mt. Blanc group; 1887, Stubai, Wildspitze, Ortler, Königsspitze, etc.; 1888, Zinal Rothhorn, Nordend, Castor, Täschhorn; 1889, Gross Wannehorn, M. Leone, Basodino, Alphubel, Ulrichs-, Laquinhorn, etc.; 1890, Pala di S. Martino, Camp. di Pravitale (second ascent), Balfrin, etc.; 1891, Palü, Bernina (Scharte), Adamello, Cima Tosa, Presanella, Cimone, Camp. di Val di Roda, Sass Maor (both); 1892, Charmoz, Dru, Dolent; 1893, Gr. Glockner, Ortler (Hintergrat), Torre di Brenta, Cimone (by N.W. arête); 1894, Balmhorn, Za (by couloir), Aig. Rouges (N. peak), Monte Rosa (from Grenz), Dent Blanche (not quite to top); 1895, Bernina district; 1898, Piz Kesch, Roseg (not quite to top); 1899, Croda da Lago, Cristallo, Kl. Zinne, Ortler (some of these ascents with the late Mr. Broome, Miss Sylvia Broome (Mrs. Corning), and Mr. R. A. Robertson); 1900, Camp. and Cima di Val di Roda.

His summer visits to the Alps continued until 1909. In the winter of 1910 he spent a month at Wengen. The following winter shows a journey through Italy and Sicily, while in February 1912 he wandered farther afield, visiting Italy, Greece, Constantinople, Palestine, and Egypt.

Yet the Alps were always his main delight, and we find him back in 1911 at Saas Fee; in 1913, and again in 1920, at Argentière.

Almost the last entry records a walk up to the Félegre. The entry is unfinished, but the little books are eloquent of the veteran's delight in the memories of many a great day.

Of the many guides who served him, probably the good-tempered and very capable Peter Dangl was the best-liked and the one with whom he did his more serious ascents, but Johann Tännler and B. Nägeli, and in later days Alois Tembl (killed on the Gabelhorn), also served him well.

He was a very finished photographer, indeed Dangl used to complain jokingly that the Herr never made a rest-day but went for a walk to photograph when not climbing. He always was a perfectly untiring walker.

Our mothers were devoted sisters, and there existed between my cousin and myself a feeling of warm affection, by no means lessened by our common interest in the Alps. It is indeed to him, and to Mr. Walker Hartley, that I owe my proposal as member of the A.C.

He was happy in his death. He leaves no enemies and many friends. To us his memory is ever green.

J. P. FARRAR.

ALEXANDER MITCHELL KELLAS.

DR. KELLAS was born in Aberdeen, and educated there. He chose chemistry as his profession. After leaving the University of Aberdeen he studied in Edinburgh, Heidelberg, and London. For some time he acted as assistant to Sir W. Ramsay at University College, and afterwards became teacher of chemistry to medical students at Middlesex Hospital. Although he was keenly interested in chemistry, he was also even more interested in mountains; and during the latter part of his life, his scientific researches all were connected with problems elucidating the effect of high altitudes on the human system; in fact, he was probably the best authority on the subject, for there was no one who had such a practical knowledge, or who had worked scientifically and with more persistence at the subject than he.

Early in his life, when he was a student at the University of Aberdeen, he wandered over all the mountains at the head of Deeside. He would camp out for days under the Shelter-stone at the head of Loch Avon, and there were few places in the Cairngorm with which he was not familiar. Later he visited many other mountain districts in Scotland.

When he was able he went farther afield, first to Switzerland and then to the Himalaya, where with a quiet persistence that was characteristic of him, he built up a wonderful record of things accomplished. But the records of his climbs are very scanty, and there are practically no records at all of some of his journeys. His third expedition, to the Sikkim Himalaya in 1910, was probably his most successful, when he made ten new ascents to above 20,000 ft., the highest being Pawhunri 23,180 ft., the next Chumiomo 22,430 ft., besides over a dozen passes and saddles over 18,000 ft. Later he visited Garhwal and Nanga Parbat. It was last autumn on Kamet, in Garhwal, that he climbed to 23,600 ft.

In the *Journal of the Royal Geographical Society* he has published several papers discussing the effect of diminished atmospheric pressure on the human system.

One of the most important of these, published in 1917, is an exhaustive paper entitled 'A Consideration of the Possibility of Ascending the Loftier Himalaya,' in which he gives a detailed account of all the factors conditioning acclimatisation to high altitudes, and discusses the question whether it is possible to ascend Mount Everest without adventitious aids (i.e. oxygen). He concludes: 'A man in first-rate training acclimatised to maximum possible altitude could make the ascent of Mount Everest without adventitious aids, provided that the physical difficulties above 25,000 ft. are not prohibitive.' Since then he has done much more work on the subject, and published several reports in connexion with the use of oxygen at high altitudes.

In all his work he was most thorough, whether it was as a teacher of medical students, as a scientific investigator, or as a mountaineer. He never spared either trouble or hard work, if by further observation more light could be thrown on the subject he had in hand. In his itinerary of 1910 one marvels at the amount of country covered, and how he was able to get his coolies comfortably over difficult snow and ice passes, and up peaks such as Pawhunri and Chumiomo; yet the same men went with him year after year. Although Dr. Kellas often would get double work out of his men, he was careful about their comfort and food when in camp, they trusted him and liked him. One of them he sent to explore the glaciers on the E. of Mount Everest, in June 1910; this man brought back two photographs that were published in the *Geographical Journal*, May 1919; they purported to be of glaciers coming down from Makalu and Everest. That he had really photographed the Mount Everest glaciers is certainly so, for the Mount Everest expedition has been to exactly the same place and sent home photographs almost the same as those obtained for Dr. Kellas.

Last year he was again in the Himalaya, amongst the mountains in Garhwal, studying the effect of oxygen at high altitudes on himself and his coolies. His highest ascent was to 23,600 ft. on Kamet. Not content with several months' hard work in the Garhwal Himalaya, he started for Darjeeling and the Sikkim Himalaya, where at the end of November he ascended a peak 18,000 ft. high, N. of the Kang La. From its summit he obtained several most interesting and valuable photographs of the high mountains N. of Mount Everest that were till then unknown. As soon as possible after the winter, about the beginning of April, he again started for the mountains near Kanchenjunga, ascending another peak N. of the Kang La 19,000 ft. high, from which he was able to see even farther round the N. side of Mount Everest. He next ascended Narsing, about 20,000 ft.; then returning N. he worked out a new route through the ice-fall on Kabru to 21,000 ft., and intended later to make use of it for the ascent of Kabru, 24,000 ft. He only returned to Darjeeling about a week before the expedition to Mount Everest started.

This continued strain was probably the cause of his sudden death from heart failure in Tibet. Dr. Kellas was of a most retiring disposition. He seldom talked of what he had done in the mountains, and there are hardly any accounts of his climbs. He, however, contributed many valuable reports and papers on the physiological and physical difficulties connected with the ascents of high mountains.

He had an unique knowledge of the Sikkim Himalaya, and his death deprived the Mount Everest expedition of one of its most valuable members, for he had studied the country round Mount Everest more deeply than anyone. It is indeed sad that having looked so many times at Mount Everest from afar, he should never see the great mountain face to face, and never set foot on the



A. M. KELLAS.

glittering snow-fields that guard the summit of the monarch of all the mountains on earth. But he has left behind him a mountaineering record of a very high order, and a scientific one that is founded on the results of painstaking, conscientious, and accurate hard work.

J. N. COLLIE.

CHARLES BULLER HEBERDEN.

1849-1921.

CHARLES BULLER HEBERDEN, who died at Oxford on May 30 last at the age of seventy-one, was the youngest son of the Rev. W. Heberden, Fellow of Exeter College and Rector of Broadhembury, Devon, his mother being one of the Devonshire Bullers. His great-grandfather was the famous Dr. Heberden, whom Dr. Johnson called '*Ultimus Romanorum*, the last of our learned physicians.' Charles Heberden had a distinguished career at Harrow, where he was known for his musical gifts not less than for his scholarship, and for an eminently beautiful character. He was elected to an open exhibition at Balliol in 1868, took a First Class in Classical Moderations in 1869 and in the Final Schools in 1871, and was early in the following year elected Fellow of Brasenose. This election determined the course of his life, which became, with a rare devotion and consistency of purpose, identified with Oxford. Not however quite from the first, for he did not decide at once on an Oxford career. His strongest natural gift was for music, and there was a period during which he contemplated taking up music as his profession. He spent the greater part of two years studying in Germany, and it was the opinion of musicians that while, as he felt himself, he had not the genius of the composer, he had it in him to attain to great distinction as a pianist and an interpreter of the works of the great masters. But in a short experience of tutorial work at Oxford he had been powerfully drawn to it. The human side of things always strongly appealed to him, and it was this, I think—the desire to work with young men—together with what he regarded as a call of duty, and not any doubts as to his musical gift, which turned the scale and brought him back to devote his life to the College. But music always remained a prime interest to him, and he did much for it at Oxford. And though it was not to be his career, it is as a musician first that many of us think of him. He was not merely an accomplished pianist; his playing had a charm and an individuality which set it apart, and he seemed to find in it his natural and most personal expression.

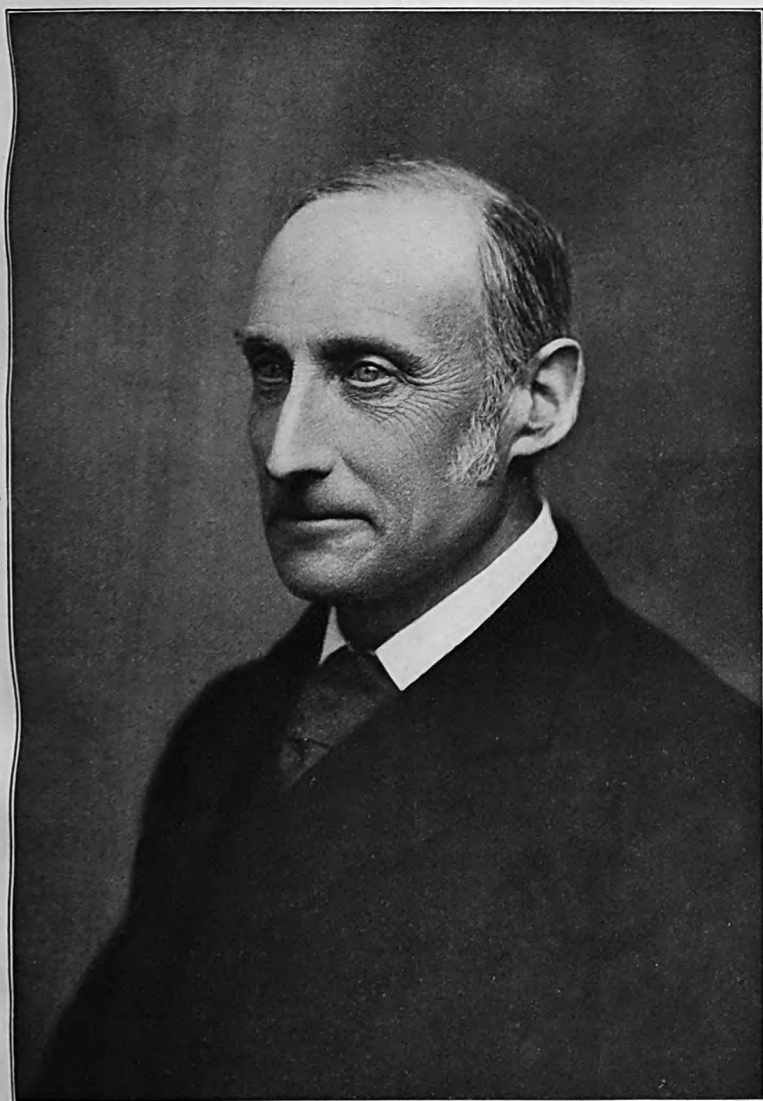
However, to Oxford he gave himself, and above all to Brasenose. He was one of the best of tutors, and he had an affection for his pupils which was not less than paternal. They did not always understand him and often gave him a great deal of trouble,

but they always knew that there was nothing he would **not** do for them. He rapidly rose to eminence in the College, and had already become its leading figure some years before his appointment, at the age of thirty-nine, to the Principalship. As Principal he remained always in close touch with the undergraduates, and extended a large hospitality to them. But indeed there was no more hospitable house in Oxford than that in which the Principal and Miss Heberden, here as always his second self, took delight in entertaining their friends. He filled the Principalship with conspicuous success for thirty-one years. He had wished to resign six years earlier, but in the difficult times of the War and the period of reconstruction which followed he could not be spared. In a striking appreciation of him by a Brasenose hand, which appeared in the Oxford *Isis* less than a month before his unexpected death, we are told what he was to his College at this time and to its members who were serving in the War. I cannot quote at length, but 'when the war closed it had forged a deeper and closer tie . . . between himself and the old B.N.C., and in the eighteen months that followed he welded together the new.'

His personality, together with his remarkable capacity for business—for this born artist and scholar was a first-rate man of affairs, clear-headed, efficient, and sound in judgment—gave him great weight in the University, notably during his tenure of the Vice-Chancellorship, to which he succeeded in 1910. 'As Vice-Chancellor' (we quote from the Oxford Magazine) 'Heberden achieved unqualified success, handling every matter with equal tact and efficiency, making himself familiar with every detail, carrying through the most intricate business with entire absence of friction, conciliating, and indeed compelling, the affection of all with whom he came in contact.'

His services and his qualities did not miss recognition. He was made Hon. D.C.L. on the occasion of the Quatercentenary of Brasenose in 1909, and Hon. LL.D. of St. Andrews in 1911. He was a Governor of Harrow and afterwards a Fellow of Winchester, and he was also President of Somerville College, whose interests as a life-long friend of women's education he served devotedly and wisely. Yet it was not respect and confidence only that he inspired, but something which he valued even more—affection, and he was spoken of at his death, though he would never have believed it, as 'the best loved man in Oxford.'

The secret lay, I think, first in his sheer goodness, a purity and unselfishness so complete as to be quite unconscious, and then in what I may best call a wonderful loving-kindness which inspired his life and which was apparent in his face and presence. But there were other qualities also which must not be left out—strength and independence, perfect fearlessness, and withal a certain capacity for severity which sometimes surprised people. He was deeply religious; but, gracious, tolerant, and broadminded as he was, he had a good deal in him of the Puritan and the standards of the world



CHARLES BULLER HEBERDEN.

were not his. As regards his opinions he was a strong Liberal and a Broad Churchman, and in his temper and outlook we may say a man of faith and an idealist.

But I must not forget that this is the ALPINE JOURNAL and that he was a Member of the Club, an honour which he greatly valued. He came to the Alps rather late, and nearly all his mountaineering (like my own) was done in middle life. But the love of the Alps, when once it had taken hold of him, never left him, and for sixteen years out of the thirty-two from 1883 to 1914, he spent some part of his summer vacations in Switzerland, Savoy, or Tirol. His climbing—but his modesty would have rather resented the word—was chiefly done in the years from 1886 to 1894, though it did not come to an end till 1907, when he was fifty-seven. I will briefly summarise.

He began in 1883 with the Aletschhorn; then came two active years in 1886–87, and again in 1891, and he was elected to the Alpine Club in March 1892, his qualifying record including the Jungfrau, Nesthorn, Monte Rosa, Rothhorn, Rimpfischhorn, and Finsteraarhorn, with the Strahlegg, Colle delle Loccie, New Weisssthor, and other passes. In 1892, with A. C. Bradley and Ernest Aves, we had the beautiful round by the Buet to Montanvert and over the Col du Géant to Courmayeur and then to Zermatt, where he ascended Monte Rosa for the second time (by the Lysjoch), and the Matterhorn. In 1893 he and I were in the Vaudois Valleys and (with Aves) in Dauphiné, his ascents including Monte Viso, Mont Pelvoux, Pic Coolidge, Aiguille du Plat, and the Brèche de la Meije.

The following year we were (with Bradley) in the Engadine, the chief ascents being Piz Bernina and Piz Palu. He was in Switzerland again in 1896, 1898–99, and 1901; but in those years, though there were many long walks, the only ascents were the Pigne d'Arolla, the Aiguilles Rouges, the Aig. de la Za, and the Wetterhorn (summit not reached owing to bad snow). For the next five years he was not in the Alps, but in 1907 we were at Cortina, where he and I went up the Pelmo, and afterwards at Heiligenblut when we did the Glockner. In 1909 he was at Bérisal and Torrent Alp with Bradley, who records 'delightful walks but no climbing,' and in 1910 at Santa Maria, Trafoi, etc. Finally, in 1914, we were all three at Engstlen Alp in bad weather when the War came, and we made our way home by an old emigrant ship from Genoa.

The list of ascents is not an ambitious one, and indeed mountaineering was never, except perhaps for two or three years, the first object—hardly a chief object—of his visits to Switzerland, rather an incident, a very delightful incident. He was not a born climber or a lover of games and sports, and the *sport* of climbing in itself did not, I think, appeal to him, nor perhaps the love of adventure, and he never had the leisure to go very far afield. But he was a great walker from his youth up, and I have never known anyone to whom walking just for itself, and still more in a fine country and fine air, was so keen a pleasure. At home his favourite country was the Lake District, which he knew intimately, and where

he had ascended nearly all the mountains, and then perhaps his native Devon. But wherever he was he walked, and O how he scorned to drive! And as to his 'climbing,' though he had no great agility he had qualities perhaps more essential—perfect nerve, a steady head, and great sure-footedness; his scholarly instinct kept him from avoidable mistakes. If we add an unruffled temper, and the *mens aequa in arduis*, we have much that goes to make the equipment of a mountaineer and, though he would hardly have allowed it, we will claim for him the title. For above all he was a true lover of the mountains, and the austere beauty of the great Alpine peaks and glaciers made a special appeal to him—and like a good mountaineer he loved to be high up in the mountains. He always recalled a certain two or three days with his favourite guide Joseph Chanton, on the high passes of Monte Rosa, as among the happiest of his life.

In nearly all his ascents I was his companion, and each year, from 1886 onwards, A. C. Bradley was with us (or with him), and specially in the later years shared nearly all the expeditions. One I may recall which I have not mentioned, when the three of us crossed the Little Schreckhorn and, delayed by unexpected difficulties, were benighted on the glacier, our only experience of the kind.

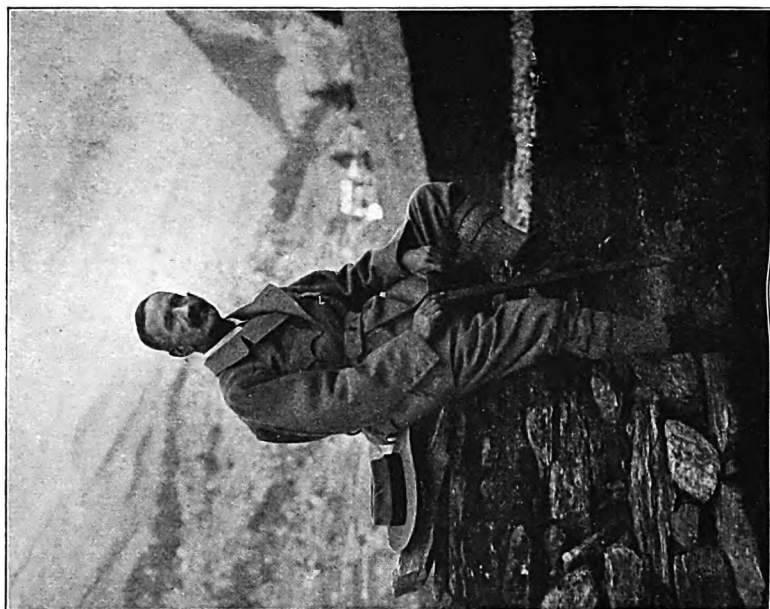
Heberden had a good knowledge of botany, and he and Bradley did much botanising together. There were two volumes which were his inseparable companions, one a pocket Botany book, the other a little black volume of Dante. He was an excellent Italian scholar, and I think Dante was his favourite poet. He had read the 'Divine Comedy' over and over again and knew much of it by heart, and what is still more uncommon, he had read through, I believe several times, the whole of the works, prose as well as poetry. He contributed some interesting papers to the Oxford Dante Society. Among English poets I think Shakespeare and Wordsworth were the most valued—he was a true Wordsworthian—and among Greek writers Homer, Pindar (of whose metres and also of Dante's he had made a special study), Sophocles, and Euripides. He was a fine classical scholar, with an exquisite sense of language and great knowledge of the literature, and it is to be regretted that he published very little. He left behind in MS. completed translations of Aristotle's 'Poetics' and the 'Odes of Pindar,' the latter of which may, we hope, one day be given to the world. But I have been too long, and here, with a painful sense how inadequate it is, I close this fragmentary record.

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CASIMIR THÉRISOD
in 1890.



SIGNOR GIOVANNI BOBBA, C.A.I.
Hon. Member of the A.C.

CASIMIR THÉRISOD.

1858-1921.

SIGNOR BOBBA, Hon. Member of the Alpine Club, writes to Captain Farrar :

Je viens d'essuyer la même adversité que vous, mon cher ami, quand nous perdîmes votre dévoué Daniel. Mon ancien compagnon Casimir Thérissod est mort le 4 avril passé.

Je vois que l'A.J. depuis quelque temps s'est imposé la tâche de régistrer et conserver tout ce qui intéresse l'histoire de l'alpinisme ; il rend comme ça un service bien précieux, surtout pour l'avenir car autrement bien des notices iraient perdues.

Eh bien ! mon modeste Casimir n'est pas indigne de quelques mots que vous pourrez lui consacrer ; je vous en serai profondément reconnaissant pour sa mémoire.

Il est né en 1858 à Rhêmes N. Dame. Tandis que les montagnards la plus part n'aiment guère s'aventurer sur les hauteurs, tout jeune il en avait au contraire le goût très prononcé. A Rhêmes dans ces temps-là pas de guides pour l'enseigner, pas d'alpinistes pour l'encourager ; il apprit tout seul la technique du grand alpinisme. Je le connus presque par hasard en 1888 et tout de suite il ne tarda à se révéler pour le meilleur compagnon que j'eusse pu désirer.

Il avait une force et une souplesse incroyables ; jamais il ne parut embarrassé dans les mauvais passages ; j'aurais dit qu'il aurait toujours pu faire quelque chose encore de plus difficile.

A la plaine il paraissait un homme sombre, de peu de mots ; sur la haute montagne on voyait le vrai dominateur du rocher et de la glace.

Telle était sa décision et sa sûreté que la confiance dans ses moyens n'avait pour moi presque pas de bornes ; sa force morale surtout était vraiment remarquable.

Vous savez bien mieux que moi que sur la montagne comme sur la mer on peut juger à fond des hommes seulement lorsque le temps est mauvais ; or c'était justement dans ces circonstances critiques que son courage inébranlable, sa constance et résistance paraissaient.

Je vous citerai un seul fait : au mois du juillet 1892 sa caravane traversant les Ecrins du N. au S. fut surprise par une tempête acharnée, qui sévit pendant trois jours. Il était avec M. Giuseppe Corra (mort depuis à la Petite Sassièrè avec d'autres compagnons) et un guide excellent mais pas de son caractère ; celui-ci le deuxième jour devint fou ; lui seul ne quitta jamais ni de travailler ni d'aider à chaque pas ses compagnons ; le quatrième jour ils furent hors danger, mais il en eut les mains et les pieds gelés.

Il a accompli presque une centaine d'ascensions nouvelles ; seulement dans le massif du Grand Paradis 38 premières ascensions ou nouvelles routes. Les Alpes Graies Valdôtaines c'étaient son

champ préféré ; mais il fit beaucoup de courses aussi ailleurs, dans la Tarantaise, dans le Dauphiné (1^{ère} ascension de l'Aig. Méridionale d'Arves depuis le Commandraut), dans les Pennines (1^{ère} traversée du Col Gnifetti depuis Macugnaga), etc.

Nous avons marché ensemble plus de trente années ; il marcha aussi avec plusieurs des meilleurs alpinistes, tels que Vaccarone, Rey, de Cessole, Montandon, Wundt, etc. ; on le jugea toujours hors ligne ; certes, jamais personne avec lui n'essuya le moindre accident ; c'est la plus grande louange qu'on puisse faire de lui comme de Daniel Maquignaz ; c'est aussi la meilleure louange de l'alpinisme bien entendu !

N'est ce pas vrai ?

Sa rencontre décida de toute ma vie alpinistique ; je commençais déjà à me frayer le chemin avec mes forces seules, lorsqu'il s'attacha à moi.

Le moyen de le quitter, mon pauvre et vaillant compagnon, pour m'en aller jouir de la montagne avec d'autres ! l'hiver il me donnait constamment des nouvelles de nos montagnes, attendant avec impatience la bonne saison.

Je suis sûr, mon cher ami, que la même chose se passait entre vous et Daniel.

Ceux qui n'ont pas eu notre bonheur, croient de confondre cette forme de collaboration avec l'alpinisme vulgaire avec guides sur des routes bien connues !

Casimir, comme Daniel, n'eut jamais besoin du secours d'autres guides ; le secours était donné par vous, par moi ; la montagne était étudiée ensemble sur l'endroit ; rien de plus intéressant que la discussion de la route et la décision à choisir. C'étaient des vrais compagnons, des amis, et la confiance était réciproque ; ils comptaient sur nous autant que nous sur eux. Ils avaient l'avantage d'être *les fils de la maison*, mais aussi quel plaisir de pouvoir réussir tout ce que l'on pouvait raisonnablement réussir !

Casimir n'eut jamais rien du côté antipatique du métier, rien de vénal ; on aurait dit un grand seigneur qui allait à la montagne pour son goût, non pour gagner de tarifs.

Jusqu'à cette année, à ces derniers jours il ne cessa de songer à ses montagnes, aux nouvelles routes ; il resta toujours jeune d'esprit, comme M. Broome.

Une personne de St. Pierre qui me vit suivre le convoi funèbre, ne savait pas s'expliquer ma profonde émotion pour 'un humble montagnard' ! Hélas, c'était le souvenir de tant de belles campagnes, de tant de sublimes jouissances sur la haute montagne qui m'éteignait le cœur. N'est-ce pas que nous sentons la disparition d'une partie aussi de nous mêmes ?

I have taken on myself to reproduce alongside of his guide-companion a characteristic portrait of my good friend M. Bobba himself.

J. P. F.

HENRI PASSET OF GAVARNIE.

1845-1919.

THIS excellent guide died last December, only a few months after Mrs. Ch. Packe, the first lady to ascend the Pelmo, and the widow of his old employer.

In the middle of last century there was not much scope for Pyrenean guides; but three of the best men were Laurent and Hippolyte Passet, brothers, and sturdy, capable, trustworthy guides, but outclassed by Henri Paget (*dit* 'Chapelle') of Héas, a mighty hunter, and in the opinion of the best judges the finest individual mountaineer ever known in the Pyrenees.

Each of the three left a son, but Victor Chapelle never had the opportunities which luck threw in the way of the cousins, Henri and Célestin Passet, each of whom was taken up in early life and trained by a member of this Club, the former by Packe and the latter by Count Russell. Never were chances better utilised, and the cousins very soon became the two best guides in the whole range. They not only knew their own mountains admirably, but were often taken farther afield, as to Dauphiny and the Alps, and never failed to acquit themselves well. Indeed, had they chosen, they might have gone to the Andes with Whymper, who, on Packe's warm recommendation, did his best to secure their services.

Each had his special merits, but if Célestin, lean and lithe, was the more dashing and the faster goer of the two, Henri behind his round, good-natured, rather stolid, Basque face concealed remarkable mental gifts, which placed his position in his profession quite beyond dispute.

The great experts in games are apt to surprise us less by the marvellous strokes they make than by the great number of very simple shots that they have to play. So it was with Henri, who never seemed to be in difficulties. Those of route, if outside his vast experience, yielded to his skill and foresight; those of personal origin, such as a surly stranger, a truculent official, and sometimes even a tired and querulous employer, all gave way before his tact, his judgment of character, and his unfailing cheeriness. He was always excellent company. On such varied topics as the habits of animals, the incidence of taxation, the course of husbandry, the effect of laws, the origin of place-names, and the philosophy of human life, he had a store of shrewd observations to make. His memory was prodigious, and his education never ceased. From every companion he learned something, and there were very few who could not learn something from him.

W. P. H. S.

BENJAMIN PESSION.

1870-1921.

LAST March there passed away at Val Tournanche, after a long illness, Benjamin Pession. He belonged to the well-known Pession family who, like the more famous Carrels and Maquignaz, made the little village of Val Tournanche so famous to climbers as the home of skilful and devoted guides. Born in 1870, and brought up under the shadow of the Mont Cervin, Benjamin acquired his climbing skill on that great mountain. Not so well known as some of the great guides of his native village, he was yet a thoroughly able mountaineer, and a trustworthy and lovable companion. He knew his own mountains perfectly, had traversed the Cervin many times, and was well acquainted with the Zermatt peaks and the districts to the W. of them. With his brother Augustin he accompanied Miss Constance A. Barnicoat to the Caucasus in 1907. Unfortunately, Miss Barnicoat fell ill and so was prevented from carrying out her programme of high ascents. It is very pleasant, however, to record that she sent her guides to Elbruz, which they duly ascended. Miss Barnicoat expresses her thorough appreciation of the willingness, devotion, and loyalty of her guides under depressing circumstances, and in his guide's book writes of Benjamin in the very highest terms.

Benjamin had travelled with me for many years in the Western Bernese Oberland and in the Eastern Graians, of which he had acquired an intimate knowledge. Amongst our first ascents were the Tour de Grauson, the N. peak of the Patri, and the Punta del Tuf, and we accomplished many new expeditions. My last long day with him was in 1913, when we went from Cogne to Locana, in the Val d'Orco, by the Valeille and the Val Soera, crossing three cols on our way. My friends, W. C. Compton and G. P. Baker, who at different times were with me, expressed a high estimate of him both as a guide and a companion.

Benjamin died after a long and painful illness contracted during his war service, and borne with patient courage. He leaves a young family of five children. He was a man who won the warm regard and respect of all who employed him, and the mountains of Cogne will never be the same to me now he is gone. *Requiescat in pace.*

G. YELD.

THE ALPINE CLUB LIBRARY.

THE following additions have been made to the Library :—

Club Publications.

- Akad. Alpen-Verein Berlin.** xi-xvii Jahresbericht 1913-1920
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 59. Berlin 1920
- Alpine Club.** American members of the A.C., May 13, 1921. By-laws (typed).
 p. 1. 1921
- Appalachian Mountain Club.** Register. 1921
 7×4 : pp. 33.
- Associated Mountaineering Clubs of N. America.** Bulletin. New York 1921
 $5\frac{1}{2} \times 4$: pp. 41.
- C.A.F.** Programme des Excursions de Printemps. 1921
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 4.
- **Caravanes scolaires.** 1921
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 4.
- C. A. I. Milano.** Elenco d. gite sociali pel 1921.
 $4\frac{1}{2} \times 3$: pp. 8.
- Centre Excursionista de Catalunya.** Xalets refugis Ull de Ter, La Renclusa.
 7×5 : pp. 40 : maps, plates. 1921
- Club Alpino Español.** Anuario 1920.
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 116 : plates.
- This contains :—
J. A. Mèlia, La Maliciosa : *C. L. Sarrate*, Sierra de Gredos : *C. D. de B.*, Vizcaya montanismo : *Saint-Saud*, El Pico de Tendenera : *E. Marzal*, Notas del Pirineo : *M. M. de Victoria*, Viaje que desde Granada hizo Sierra Nevada D. Antonio Pons en 1754.
- Fédération d. Sociétés pyrénéistes.** Commission de toponymie. Essai d'un glossaire des noms topographiques les plus usités dans la vallée de Cauterets et la région montagneuse des Hautes-Pyrénées. 2me édition. Alphonse Meillon. Cauterets, Thalabot 1911
 $10 \times 6\frac{1}{2}$: pp. 33-99.
- Japanese Alpine Club.** Sangaku. Vol. xv, No. 2. 1920
 Contains in English : Scrambles in the southern Japanese Alps.
- Pennsylvania Mountaineer.** Third annual publication of the Pennsylvania Alpine Club. 1919
 $7\frac{1}{2} \times 5\frac{1}{2}$: pp. 146 : ill. Altona 1921
- Rucksack Club.** Rules, &c. 1921
 $4\frac{1}{2} \times 2\frac{1}{2}$: pp. 48.
- S.A.C. Basel.** Jahresbericht für 1920. 1921
 9×6 : pp. 47.
- **Zweiter Nachtrag zum Katalog d. Bibliothek.** 1921
 9×6 : pp. 28.
- **Chaux-de-Fonds.** Bulletin annuel no. 29. 1920
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 72 : plates.
- This contains :—
E. Dubois, Course à la Pierre à Voir : *J. Gallet*, Petits sommets valaisans.
- **Lindenbergl.** Gedenkschrift zum 25jährigen Bestand. Von Hugo Müller. Wohlen 1919
 $8 \times 5\frac{1}{2}$: pp. 18.
- **Mythen.** Die Mythen. Von Hugo Müller. Schwyz, Triner, 1919
 $8 \times 5\frac{1}{2}$: pp. 169 : map, plates.
- Sucal. Sci.** Testo del Signor Conte Dott. Ugo Ottolenghi. Marzo 1921
 $6\frac{1}{2} \times 4\frac{1}{2}$: pp. 76 : ill.

Svenska Turistföreningens Årsskrift.

1921

8½ × 5½ : plates.

This contains :—

A. Pallin, Högst uppe i Kebnekaise : *A. Kihlbom*, Sulitälma.

Unione Operala Escursionisti Italiani. Organo Mensile di Propaganda. Anno 2. N. 6-7.

Giugno-Luglio 1920

9½ × 6½ : pp. 16, 16 : ill.

Yorkshire Ramblers' Club. Report, 1919-20, &c.

1920

8 × 5½ : pp. 17.

New Books.

Arthur, J. W. Mount Kenya. In *Geogr. Journ.*, London. Vol. 58, No. 1.

9½ × 6 : pp. 8-25 : plates.

July 1921

Baddeley, M. J. B. The English Lake District. 13th edition. Thorough Guide Series.

London, Ward Lock (1921). 6/-

6½ × 4½ : pp. xxxiv, 286 : maps.

This is a revised edition of what has long been by far the best guide-book for anyone to carry with him on a visit to the Lakes. Some 80 pages are specially devoted to climbing, but the most technically expert and difficult rock ascents are not given. This is wise in a work meant for general use.

Barbler, Olinto. Il nuovo confine italo-austriaco. In *L'Universo*, Milano, anno 2, num. 2.

Febbraio 1921

9½ × 6½ : pp. 125-134 : map, plates.

Blacker, L. V. S. Travels in Turkestan, 1918-20. In *Geogr. Journ.*, London, vol. 58, no. 3.

September 1921

9½ × 6 : pp. 178-198 : ill.

Blanchard, Marcel. Bibliographie critique de l'histoire des routes des alpes occidentales sous l'état de Piémont-Savoie.

Grenoble, Allier, 1920

10 × 6½ : pp. 119 : ill.

Burrard, S. On the Origin of Mountain Ranges. In *Geogr. Journ.*, London, vol. 58, no. 3.

September 1921

9½ × 6 : pp. 199-219 : ill.

Candler, Edmund. On the Edge of the World. London, etc., Cassell, 1919

8 × 5½ : pp. (viii) 278 : plates.

Coolidge, W. A. B. Mountaineering in Switzerland; in the Swiss Tourist Almanac, q.v.

1920

8 × 5 : pp. 63-75.

Coolidge, W. A. B. Geburtstag von. In *Oberländ. Volksblatt*, Interlaken. Aug. 26-Sept. 5, 1920

Corti, Alfredo. Antonio Cederna. Discorso commemorativo letto la sera del 10 aprile 1920, nel salone del circolo sociale di Sondrio per iniziativa della Sezione Valtellinese del C.A.I. Bologna, Indust. graph. ital. 1920

9½ × 6½ : pp. 25 : portrait.

Ferrand, Henri. Sur le prétendu éboulement du Mont-Blanc.

7 × 4½ : pp. 28.

Grenoble, Eymond, 1921

The Geographical Journal. Vol. 57.

January to June 1921

9½ × 6 : pp. viii, 942 : maps, plates.

This contains the following articles :—

No. 1. January. *C. G. Bruce*, Mount Everest : pp. 1-21 : map, plates.

No. 2, February. *H. Palmer*, Gold Range and Selkirk Range : pp. 21-9 : map, plates. Mount Everest Expedition : pp. 73-5.

E. H. Bury, Approaches to Mount Everest : pp. 121-4 : *Dr. Kellas*, Expedition to Kamet : pp. 124-130.

No. 3, March. *D. Baud-Bovy*, Olympus : pp. 204-13 : map, plates : *H. T. Morshead*, Kamet; 1920 : pp. 213-219 : map : *J. N. Collie*, Mr. Freshfield's De Saussure : pp. 219-224 : *C. W.*, Mountaineering, review : pp. 224-6.

No. 4, April. Mount Everest Expedition : pp. 271-282.

No. 6, June. Mount Everest Expedition : pp. 460-1.

- Gox, F.** Les inondations en Maurienne et dans les Alpes occidentales, 24 Septembre 1920. In *La Géographie*, Paris, t. 35, no. 2. Février 1921
10 × 6½ : pp. 147-164 : ill.
- Gos, Charles.** L'alpinisme et les princes. In *Bibl. Univers.*, t. 97, no. 290. 8½ × 5½ : pp. 272-8. Février 1920
- Gos, Charles.** Le vainqueur du Mont Blanc. In *Semaine littéraire*, t. 29, no. 1415. 13 × 9½ : pp. 76-8. 12 Février, 1921
- Gos, Charles.** Le roi Albert au Grépon : Alpinisme acrobatique (Rey) : Un grande alpiniste (W. A. B. Coolidge) : Le tragique affaire du Cervin. In *Journal de Genève*. 4 Juillet 1920 : 9 Août 1920 : 26 Septembre 1920 : 14 Février 1921.
- Gos, Charles.** Près des Névés et des Glaciers. Impressions Alpestres. 4^{me} édition. Paris, Fischbacher, 1921. Fr. 12
- This contains :—
'Impressions,' 'croquis,' 'haute montagne,' 'profils de grimpeurs,' under such titles as In memoriam, Hymne à la montagne, Au chalet, Lumière, Deux vieux guides, Le Cervin de Zmutt : Henriette d'Angeville, Amé Gorret, E. Whymper. Good, pleasant reading, fact and imagination ; written by one who shows almost adoration of mountain nature.
- Govi, Silvio.** Transcaucasia. In *L'Universo*, Milano, anno 2, num. 2. 9½ × 6½ : plates : pp. 81-120. Febbrajo 1921
This contains a bibliography.
- Guyer, R.** Hallo, die Berge ! Eine Geschichte für Kinder. Schweizer Jugendbücher 10. Bd. Zürich, Orell Füssli (1921)
A child's story of a holiday among the mountains.
- [**Hartley, H. S., and Gray, Oliver.**] The roof-climbers' guide to St. John's. 8½ × 5½ : pp. 31 : ill. Cambridge, Metcalfe, 1921. 2/-
- Helbling, Robert.** Beiträge zur Topographischen Erschliessung der Cordilleras de los Andes zwischen Aconcagua und Tupungato. S.A. 23. Jahresh. d. Akad. A. C. Zürich, 1918. Zürich, Bollman, 1919
9 × 6 : pp. 77, 18 : maps, plates.
- Hotels.** Official Guide of Swiss Hotels. 1921
7 × 4½ : pp. 52.
- Inaka.** Vol. 14. Kobe, 1921
9 × 6½ : pp. 102 : plates.
Contains :—
pp. 4-6, *Yae-Kichi, Yabe*, Mountains in Japan : pp. 7-14, *W. H. Elwin*, In the Southern Alps : pp. 15-21, *R. J. A.*, Climbing in Kamchatka : pp. 33-42, Poetry on Mountains, fragmentary extracts : pp. 76-101, *W. Weston*, Ascent of Kaigane San.
- Kellas, Alexander Mitchell.** Obituary notice. In *Geogr. Journ.*, London, vol. 58, no. 1. July 1921
9½ × 6 : pp. 73-5.
- Lewis, J. Hardwicke.** Catalogue of an exhibition of Swiss sketches and water-colour drawings. May 23-June 4, 1921
- Lovelace, Mary Countess of.** Ralph Earl of Lovelace. 8½ × 5½ : pp. viii, 120 : portraits. London, Christophers (1920)
- Lunn, A.** Summerski-ing in Switzerland. In *Swiss Tourist Almanac*, 7^{v.}, 1920 pp. 82-8.
- Martel, E. A.** Nouveau traité des eaux souterraines. Paris, Doin, 1921
10 × 6½ : pp. 840 : ill.
- McGuire, J. A.** In the Alaska-Yukon Gamelands. Introduction by William T. Hornaday. Cincinnati, Stewart Kidd (1921). \$3
7½ × 5½ : pp. 215 : plates.
A book of interest to the mountain sportsman off the beaten track. On sheep, moose, caribou ; with outfitting hints, which are useful.
- Meillon, Alphonse.** Excursions topographiques dans la Vallée de Cauterets. 10 × 6½. Cauterets, Luche, 1920
1^{me} partie. Exposé chronologique des opérations. . . .
2^{me} partie. 40 panoramas.

- 3me partie. Triangulation géodésique complémentaire de la région de Caunterets.
The above have been presented by M. Meillon.
- Mercial, Giuseppe. Osservazioni sui ghiacciai del gruppo dell' Adamello. In Boll. R. Soc. Geogr. Ital., ser. v., vol. 9, num. 7-10. Luglio-Ottobre 1920
- De Mount-Everest Expeditie. In Tijds. kon. nederl. aardrij. Gen. Juli 1921
9½ x 6½: pp. 643-6: map.
- Mount Everest Expedition. In Geogr. Journ., London, vol. 58, no. 1. July 1921
9½ x 6: pp. 56-8.
- Mount Everest Expedition. In Geogr. Journ., London, vol. 58, no. 3. September 1921
9½ x 6: pp. 225-6.
- Nippgen, J. L'ascension du Mont Everest. In La Géographie, Paris, t. 35, no. 4. Avril 1921
10 x 6½: pp. 282-287.
- Onslow, H. Life on the Roof of the World. The problems of the Mt Everest Expedition. In Conquest, London, vol. 2, No. 6. April 1921
10½ x 8½: pp. 237-245: ill.
- Oppenheim, Edwin. The Reverberate Hills. (Reissue.) London, Constable, 1921
7½ x 5: pp. 56.
- Recueil des travaux de l'Institut. de Géogr. Alpine (Université de Grenoble), t. 16, 3-4; t. 17, 1-4. Grenoble, Allier, 1918, 1919
10 x 6½: 262-507: 731.
- 1918 (3) R. Blanchard, Comparaison des profils en long des vallées de Tarentaise et Maurienne: E. Clouzot, À propos de la Haute Vallée du Vénéon à la fin du xv^e siècle: (4) J. Crivic, Hydrographie souterraine et évolution morphologique du Karst: E. Bénévent, La neige dans les Alpes françaises.
- 1919 (1) M. Pardé, Phénomènes torrentiels sur le rebord oriental du massif central: (2) R. Blanchard, Altitude moyenne des régions naturelles des Alpes françaises: P. Arbos, Le val Pellice: H. Zivy, Les cartes de Savoie au xvi^e siècle: (4) S. Ténol, Massif de Belledonne: R. Blanchard, Altitudes d'habitat.
- Reif, Henry Ottridge. A Tour of America's National Parks. New York, Dutton (1920). \$4
8½ x 5½: pp. x, 209: plates.
The national mountain parks of the United States have now a considerable body of literature devoted to them. This work is written by an enthusiast, and succeeds in conveying the impression that the various parks are well worth seeing and exploring.
- Rucksack. Bergans Moes og Rygsack. Kristiania, 1921
6 x 9½: pp. 31.
Advertisement of a new form of rucksack.
- Séjourné. Traversées des Alpes. Leurs lignes d'accès. Rapport. Paris, 1920
11 x 7: pp. 40.
- Switzerland. Swiss Tourist Almanac. Summer season. Olten, Walter, 1921
8 x 5: pp. 109.
- Troussu, P., et Saint-Yves, G. Le Haut-Atlas de Marrakech. In La Géographie, Paris, t. 35, no. 4. Avril 1921
10 x 6½: pp. 262-279.
- Turner, Samuel. Men of Mark. In Stead's, Melbourne. May 14, 1921
9½ x 6½: pp. 555-558: portrait.
- Vallot, Charles. Le massif du Mont Blanc. Paysages caractéristiques et documentaires. Tome 1, Parcours des Vallées et des Hauts Alpagnes. Préface d'Henri Vallot. Versailles, Dufay (1921)
9½ x 7½: pp. 6: 100 plates.
- Ward, F. Kingdon. The Mekong-Salween Divide as a geographical boundary. In Geogr. Journ., vol. 58, no. 1. July 1921
9½ x 6: pp. 49-56: plates.
- Wordie, J. M. Present-day conditions in Spitsbergen. In Geogr. Journ., London, vol. 58, no. 1. July 1921
9½ x 6: pp. 25-49: plates.

Young, G. W. (edited by). *Mountain craft.* London, Methuen (1920). 25/-
8½ × 5½ : pp. xvii : 603 : plates.

This contains :—

By the *Editor, Management and Leadership*—Guided and Guideless
Mountaineering—Rock Climbing—Climbing in Combination—
Corrective Method—Ice and Snow Craft—Reconnoitring : *A. Lunn*,
Mountaineering on Ski : *S. Spencer*, Mountain Photography :
A. F. R. Wollaston, Mountaineering in Tropical Countries : *Sir*
W. Martin Conway, Mountaineering in the Arctic (Spitsbergen) :
H. Raeburn, The Caucasus : *G. Finch*, The Mountains of Corsica :
T. G. Longstaff, The Himalaya : *W. Cecil Slingsby*, The Mountains
of Norway : *M. Ross*, The Southern Alps of New Zealand : *C.*
Elliott, The Pyrenees : *A. L. Mumm*, The Rocky Mountains.

Older Books.

Ball, John. Observations on the structure of glaciers. In *Phil. Mag.* London.
8 × 5 : pp. 481-504. December 1857.

— Remarks on the veined structure of glaciers. In *Phil. Mag.* London.
8 × 5 : pp. 6. April 1859

— Forbes and Tyndall on the alps and their glaciers. In ?
v. 113, no. 229. c. 1860
8 × 5 : 221-252.

— On the cause of the descent of glaciers. In *Phil. Mag.* July, Sept. 1870 :
Febr. 1871.

— Notice of soundings executed in the Lake of Como, with a view to deter-
mine the form of its bed. In *Geol. Mag.* London, v. 8, no. 8.
8 × 5 : pp. 5 : plate. August 1871

— Intorno la formazione dei bacini lacustri e l'origine dei laghi alpini. In
Politecnico, v. 24. ? 1872
8 × 5 : pp. 266-281.

Black's Picturesque Tourist of Scotland. Edinburgh, Black, 1840
6½ × 4½ : pp. viii, 315 : map, plates.

Catullo, T. Antonio. Geognosia dei massi erratici che si vengono sui monti
e nelle valli adiacenti dello Stato Veneto. In ? c. 1850
8½ × 6½ : pp. 353-362.

de Collegno. Note sur le terrain erratique du revers méridional des Alpes.
In *Bull. Soc. géol. de France*, t. 2, 2 sér. 1845
8 × 5 : pp. 20.

Cooper, J. R. Various letters and news-cuttings in connection with the dis-
appearance of Mr. Cooper at Zermatt in 1897.

Croll, James. On the physical cause of the motion of glaciers. In *Phil. Mag.*
London. March 1869
8 × 5 : pp. 6.

Darwin, Charles. Extracts from letters to the general secretary on the analogy
of the structure of some volcanic rocks with that of glaciers. In ?
8½ × 5½ : pp. 17-18. c. 1850

Forbes, J. D. Sixth letter on glaciers. Seventh and eighth. In *Edin. New*
Phil. Journ. 1844
8½ × 5½ : pp. 25.

— Reply to Mr. Hopkins on the motion of glaciers ; with reasons for avoiding
further controversy. In *Phil. Mag.*, London. May 1845
8 × 5 : pp. 404-418 : ill.

— Eleventh letter on glaciers. In *Edin. New Phil. Journ.* 1846
8½ × 5½ : pp. 8 : plate.

— Twelfth letter on glaciers. In *Proc. Roy. Soc. Edin.* December 1846
8½ × 5½ : pp. 10 : ill.

— Thirteenth letter on glaciers. In *Proc. Roy. Soc. Edin.*, v. 42.
8½ × 5½ : pp. 19 : plates. December 1846

- Forbes, J. D.** Fifteenth letter on glaciers, containing observations on the analogies derived from mud-slides on a large scale. In *Edin. New Phil. Journ.* 8 x 5: pp. 10: plate. January 1849
- Fraser, Hugh.** Seven years on the Pacific slope. London, Laurie, 1917
8 x 5½: pp. xiii, 391: plates.
- Gordon, Lewis.** On the viscous theory of glaciers. In ? January 1845
8½ x 5½: pp. 19-20: plate.
- Guides.** Tarif pour la Société des guides de Champéry. 1864
7 x 4½: pp. 4.
- Guides.** Règlement für die Bergführer und Träger Kanton Bern. Typed copy. 12 Mai 1856
11 x 8½: pp. 10.
- Huxley, Henry.** Glaciers. In *Brit. Quart. Rev.*, vol. 32. Oct. 1860
8 x 5.
- India.** Records of the Survey of India, vol. viii. Exploration in Tibet and neighbouring regions, 1865-1892. Dehra Dun, 1915
2 vols. 13 x 8½: pp. vi, 411: maps.

These volumes contain reprints of various papers, as follows:—

- I. *Nain Singh*, Route Survey Nepāl to Lhāsa (Surv. Ind. 1866-7):
Nain Singh, Trans-Himalayan explorations (Surv. Ind. 1867-8):
Kalian Singh, Trans-Himalayan explorations (Surv. Ind. 1868-9):
Hari Ram, Trans-Himalayan explorations (Surv. Ind. 1871-2),
Kishen Singh, Tengri Nor Lake (Surv. Ind. 1873-4): *Hari Ram*,
Pithoragarh, viâ Jumla to Tra-Dom (Surv. Ind. 1873-4): *Kishen Singh*,
Western Tibet (Surv. East. Turkestan. 1873-4): *Nain Singh*,
Leh to Lhāsa (*Journ. R.G.S.* 1877): *Lala*, Exploration of Shigatse etc.,
compiled by J. B. N. Hennessey (Surv. Ind. 1878-9).
Lala, Narrative of above (Surv. Ind. 1878-9): *Lala*, Narrative,
second expedition (Surv. Ind. 1878-9): *Nem Singh*, Eastern Tibet
(Surv. Ind. 1878-9).
- II. *Kishen Singh*, Great Tibet and Mongolia (*ex* Explorations in
Great Tibet, 1884): *Serap Gyatsho*, Lower Tsang-Po (*ex* Explorations
in Sikkim, 1889): *Kinship*, Darjeeling to Gyala (*ex* Explorations
in Sikkim, 1889): *Ugyen Gyatso*, Tibet (*ex* Explorations in
Sikkim, 1889): *Rinzin Nimgyl*, N. and N.W. of Kinchinjunga
(Surv. Ind. 1884-5): *Hari Ram*, Dagmara Thana to Ting-ri (*ex*
Explorations in Nepāl, 1887): *Atma Ram*, Route Survey in Tibet
(Surv. Ind. 1891-2).
- Klaproth, Jules.** Voyage au Mont Caucase et en Géorgie. Nouvelle édition.
2 vols., 7½ x 4½: pp. 520-576. Paris, Gosselin: Odessa, Mieville, 1825
- L.** Reise über den Tschingelgletscher im Juli 1808. Typed copy from
Miszellen f.d. neueste Weltk. no. 69. 27. Aug. 1808
11 x 8½: pp. 11.
- Lortsh, A.** Anglichane i iselyedovanie Kavkaza. Reprint from 'Kavkas.-
Kurorti.' 1917
8½ x 5½: pp. 7.
- — — Typed English translation.
- — — Angliski alpski Klub. Reprint from 'Kavkas.-Kurorti.' 1917
8½ x 5½: pp. 8.
- — — Typed English translation.
- Lullin, P. E.** Relation d'un voyage en Suisse et à Chamonix en 1819. Printed
in 'Echo des Alpes,' No. 9, 1920.
9 x 5½: pp. 245-268: plates.
- Martins, Ch.** Du retrait et de l'ablation des glaciers de la Vallée de Chamonix
constatés dans l'automne de 1865. In *Bibl. Univers. Arch. d. Sc.*
8 x 5: pp. 16. Juillet 1866
- — — Les traces et les terrains glaciaires aux environs de Baveno. In *Arch. d. Sc.* Juillet 1866
8 x 5: pp. 18-22.

de Martonne, Emm. L'érosion glaciaire et la formation des Vallées Alpines.
In *Annales de Géogr.*, t. 19, 20, nos. 106, 109.

15 Juillet 1910–15 Janvier 1911

10 × 6½ : pp. 289–310 : 1–60 : plates.

Mathews, William. On the contributions of the Rev. Henry Moseley to the theory of glacier motion and the present state of the problem. Reprint from *Alp. Journal*, n. 28.

February 1870

8 × 5 : pp. 18.

— On Canon Moseley's views upon glacier motion. In *Phil. Mag.*, London.

8 × 6 : pp. 3, 6. November 1871 : December 1871

Maw, George. Notes on the geology of the plain and the Great Atlas. In *Quart. Journ. Geol. Soc.*

May 1872

8½ × 5½ : pp. 97 : plate.

— A journey to Morocco and ascent of the Great Atlas. A lecture delivered before the Birmingham and Midland Institute.

8½ × 5½ : pp. 28.

Ironbridge, Slater (1872)

Meillon, Alphonse. Esquisse toponymique sur la Vallée de Cauterets.

10 × 6½ : pp. 396.

Cauterets, Thalabot, 1908

Morrill, John B. S. Letters descriptive of journeys in Europe and Asia Minor in the years 1794–1796.

London, Murray, 1914

8½ × 5½ : pp. 106–7 : Ascent of Mt Olympus. 1794.

Moseley, Rev. Henry. On the descent of glaciers. In *Proc. Roy. Soc.*, London, v. 7.

April 19, 1855

8 × 5 : 333–342.

— On the cause of the descent of glaciers. *Bristol Naturalists' Soc.*

8 × 5 : pp. 10.

December 2, 1869

— On the descent of glaciers. *Roy. Instit. Gt. Brit.*

8 × 5 : pp. 10.

May 13, 1870

Murchison, R. I. On the distribution of the superficial detritus of the Alps. Abstract, (?) *Proc. Geol. Soc. London.*

1866

8 × 5 : pp. 4.

Pirone, Giulio Andrea. Sulle antiche morene del Friuli. In *Atti d. Soc. ital. di Sc. nat.* v. 2.

Febbrajo 1861

8 × 5 : pp. 9 : plate.

Révil, Joseph. Les alpes et la formation de montagnes. In *Bull. Soc. langued. de Géogr.*, t. 36.

1913

10 × 6½ : pp. 85–114 : ill.

Ropes. On ropes and knots. Edited by J. P. Farrar. Proof. July 1913

8½ × 5½ : pp. 8 : plates.

Singh, Bhawani. Travel picture. The record of a European tour.

9 × 5½ : pp. 176–184 : Switzerland.

London, Longmans, 1912

Smith, Albert. A hand-book of Mr. Albert Smith's ascent of Mont Blanc, illustrated by Mr. William Beverley.

? 1852

7½ × 5 : pp. 28 : ill.

This is not the usual oblong form of the hand-book. Contemporary cuttings from the *Illustrated London News* have been added and a free-pass to the Lecture in the form of a passport from 'Albert Smith, one of Her Britannic Majesty's Representatives on the summit of Mont Blanc . . . in the Name of His Majesty the Monarch of Mountains,' is also added.

[**Smith, Horace.**] The Midsummer Medley. A series of comic tales . . . By the author of 'Brambletye House.'

London, Colburn, 1832

6 × 3½ : vol. i, p. 101–114 : 'A tour to the Lakes.'

This is by Horace Smith, one of the authors of 'Rejected Addresses.'

The verses on the 'Tour' open thus :—

Some of our summer Tourists seek the Alps,
Risking their own to climb the mountains' scalps,
And if they do not slip, and so

Stick midway in some icy nook

O'erhanging an abyss of snow ;
 Or that no avalanche down-slides,
 Engulphing them and all their guides,
 They write a book,
 To show the world what fools they've been
 And tell the nothings they have seen.
 Others there are who can't abide
 To glide and slide on a glacier's side,
 When a trip or a slip would send them to dip,
 With a hop and a skip,
 In a bath of snow, where you take the pleasure
 Of dying by inches and freezing at leisure.

- v. Sonklar, C.** Ueber die Structur der Gletscher. SA. Deutsch. Vierteljahrschrift, no. 131. September 1870
 8 x 5: p. 230-337.
- Stephen, Leslie.** The playground of Europe. New impression. London etc. Longmans, 1907
 7½ x 5: pp. xiv, 339: plates.
- Switzerland.** Etat et délices de la Suisse. Nouvelle édition. Basle, Tourneisen, 1776
 4 vols., 6½ x 3½: maps, plates.
 Presented by D. W. Freshfield, Esq.
- Tyndall, John.** Observations on glaciers. Roy. Instit. Gt. Brit. January 23, 1857
 8 x 5: pp. 8. June 4, 1858
- On the Mer-de-glacé. Roy. Instit. Gt. Brit.
 8 x 5: pp. 10.
- Review of Glaciers of the Alps. In Edin. New Phil. Jour., n.s. vol. 12, October 1860
 no. 2.
 8 x 5: pp. 249-265.
- Whewell, Dr.** On glacier theories. In Phil. Mag. February 1845
 8 x 5: pp. 1-3.
- Additional remarks. In Phil. Mag. March 1845
 8 x 5: pp. 3-6.
- On Mr. Hopkin's reply. In Phil. Mag. May 1845
 8 x 6: pp. 6-8.
- [Wills, Alfred.]** Glaciers and glacier theories. In National Rev., London, July 1859
 no. 17.
 8 x 5: pp. 30.
- Younghusband, Francis.** Among the Celestials. A narrative of travels in Manchuria, across the Gobi Desert, through the Himalayas to India. London, Murray, 1898
 Abridged from 'The Heart of a Continent.'
 8 x 5: pp. xi, 261: plates.
- Zschokke.** Besteig. v. Montblanc von Marie Paradis. Typed copy from Misz. 17. Aug. 1808
 f. d. neueste Weltk., no. 67.
 11 x 8½: pp. 2.

Subject Index to Club Publications and Recent Books and Articles.¹

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| Africa: Troussu, P., Haut-Atlas. | England: H. S. Hartley, St. John's. |
| America, N.: J. A. McGuire, Alaska | — M. J. B. Baddeley, English Lake District. |
| Gamelands. | |
| Andes: R. Helbling, Aconcagua. | Equipment: Rucksack. |
| Belledonne: Recueil d. travaux. | France: M. Blanchard, Routes d. Alpes. |
| Biography: W. A. B. Coolidge. | — Recueil d. travaux. |
| — A. Corti: A. Cederna. | |
| Canada: Geogr. Journal. | Glaciers: G. Merciai, Adamello. |
| — G. W. Young, Mountain Craft. | Himalaya: G. W. Young, Mountain Craft. |
| Caucasus: S. Govi. | Hotels: Official Guide of Swiss Hotels. |
| — G. W. Young, Mountain Craft. | Huts: Centre Excurs. Catal. |
| Corsica: G. W. Young, Mountain Craft. | |

¹ Club publications in italics.

Italy: O. Barbier, Nuove Confini.
 Japan: Inaka.
 Kamet: Geogr. Journal.
 Mont Blanc: H. Ferrand, Eboulement.
 — C. Gos, *Le vainqueur*.
 — C. Vallot, *Massif du M.B.*
 Mount Everest: Geogr. Journal.
 — Mount-Everest Expeditie.
 — Nippgen, J., *Mont Everest*.
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 National Parks: H. O. Reif, *America's N.P.*
 New Zealand: G. W. Young, Mountain Craft.
 Norway: G. W. Young, Mountain Craft.

Obituary: A. M. Kellas.
 Olympus: Geogr. Journal.
 Pyrenees: *C. A. Españ.*
 — *Fidn. Soc. pyr.*
 — A. Meillon, *Cauterets*.
 — G. W. Young, *Mountain Craft*.
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 — G. W. Young, *Mountain Craft*.
 Sullitälma: *Svenska Turist*.
 Vénéon: *Recueil d. travaux*.

NEW EXPEDITIONS.

Graians.

COL DE CHALANSON (3327 m. = 10,916 ft., I. map. *Cf. Ball, 'Western Alps,' pp. 261, 264.*)

July 10, 1921.—Lt.-Col. E. L. Strutt, with Pierre Blanc of Bonneval-sur-Arc. Party left Bonneval in perfect weather at 03.55, and by the Vallonet Glacier attained the Col du Greffier (3112 m., French map) at 07.30. Leaving again at 08.10, they followed the route of the Albaron (3662 m., French map), skirting the upper névés of the Evettes Glacier as far as the Selle d'Albaron (*cf. Ball, p. 261*), attained at 09.30. Thence bearing S.E., they followed the ridge, descending slightly, to the lowest depression between the Albaron and the Piccola Ciamarella (3505 m., French map). Shortly after leaving this point the party, owing to the heat and the quantity of fresh snow which had fallen two days previously, abandoned their intention of climbing the Ciamarella (3676 m., French map) and returned to the said depression or Col de Chalanson.

On the N. side of the col, an excessively steep and narrow icy curtain descends direct to the surface of the Evettes Glacier. This slope is some 750 ft. high, and is bounded to the E. by rock slabs, flush with the slope and barely emerging from the ice, while to the W. a vertical rock wall, crowned with heavy corniches, extends as far as the Selle d'Albaron.

Finding that about 1 ft. of fresh snow, still in good condition, was resting on the ice-slope, the party, at 10.10, descended backwards, kicking steps, down this slope, which must average fully 55°–60°,

till they arrived at a point some 50 ft. above the bergschrund. Here the snow vanished, and after cutting 30 steps in hard ice set at an extremely high angle, they were able to jump down and over the schrund without difficulty, at 11.00. Bearing N.N.E. with some trouble from crevasses, the party joined the route of the Col de Sea, and by this route descended to the Réfuge des Evettes and Bonneval.

Pierre Blanc informs me that only once had he previously seen snow on the N. slope in such condition as to warrant a descent, and, on this occasion, being with a weak party, the crossing could not be attempted. Our descent was made under absolutely safe conditions, although an *ascent*, owing to the overhang of the bergschrund, would probably have proved impracticable. The S. slope of the pass towards the Glacier du Collerin (and Balme) is a gentle snow-walk.

Not being certain that the pass was identical with Ball's Col de Chalanson, so named by M. Charles Rabot in 1878 (*C.A.F. Annuaire*, 1878, pp. 250-1), and that this name was already adopted by French, British, and Italian authorities, these latter in 1889 and (?) earlier, we called the pass 'Col de l'Entente.'

I am deeply indebted to Mr. Coolidge for his kindly topographical and bibliographical assistance.

E. L. S.

Dauphiné.

THE N.W. OR VALJOUFFREY FACE OF PIC D'OLAN (3578 m.=11,739 ft.). M. Paul Guiton, with Célestin Bernard of La Chapelle en Valjouffrey. August 5, 1921.

The party left the Cabane du Chatellarat, in Valjouffrey, at 4.30 A.M., followed the route to the Brèche d'Olan as far as the névé, which forms a lake (6.45), then made for the snow couloir which discharges on to this névé, took to the rocks of its right bank, crossed it higher up and then an arête, reaching thus the rocky cirque under the Pic (8.30). They then climbed a blackish chimney which descends from the summit of the second *barre* between the Brèche and the Pic. They quitted this at two-thirds of its height, and traversed to the right on wide *vires*. A short climb led them to the ridge, where they joined (10.30), at the actual foot of the Pic, the La Lavey route, by which the summit was reached at 12.30.

M. Guiton speaks with enthusiasm of the interest of this climb, and recommends the construction of a refuge above the *Cabane de bergers de la Maye*, at about 2100 m.

Mont Blanc Group.

MONT DOLENT (3823 m.=12,543 ft.), BY THE S.W. FACE.—Sⁱ G. F. Gugliermi and F. Ravelli; Sⁱ S. Noci, G. Quaglia, and E. Locchi. August 17, 1920.

The two parties left the Triolet hut at 7.30 A.M., weather being



G. F. Gugliemina.

S.W. FACE OF MT. DOLENT.

uncertain, and followed the usual route round Les Mts. Rouges to the upper plateau of the Glacier de Pré de Bar, out of which the S.W. face rises steeply 600 m. high. The route followed has been marked on the illustration by Signor Gugliermi himself. The middle of the face is seamed by a great and, immediately to the right, by a parallel smaller snow couloir. The parties crossed the *rimaie* to gain the first rocks of the right bank of the smaller couloir, whence up good rocks and very steep ice-slopes they gained the névés which feed this couloir. They then bore left-handed (W.) and reached the rock arête forming the left bank of the great couloir, which they followed, bearing eventually left up the centre of the upper face (no special difficulties) to the summit (17.45). Actual walking, about 7 hours, but in good conditions probably 5 or 6.

Signor Gugliermi thinks that the striking grandeur of the S.W. face renders the above route preferable to the somewhat monotonous, ordinary way by the S.E. flank.

AIGUILLE DES GLACIERS (3834 m. = 12,579 ft.).—Neither the last edition of Kurz's Guide nor the Guide of the Ö.A.C. mention any route up this peak from the Glacier de Trélatête other than that by the Col des Glaciers. On July 12, 1921, Messrs. R. Bicknell, C. A. Elliott, H. E. L. Porter, and L. G. Shadbolt left the Pavillon de Trélatête. Having ascended the Glacier de Trélatête till opposite the Col des Glaciers, they thought it probable that a very much shorter route could be found by avoiding the Col des Glaciers and ascending to the W. ridge by a subsidiary rock ridge which bounds on the E. the nameless tributary glacier descending from the Col des Glaciers. After some slight difficulty in getting from the ice on to the rocks at the foot of the ridge, they unroped and climbed without difficulty of any sort straight up to the main W. ridge. The point at which this ridge was struck is about 200 mètres above and a full kilomètre to the E. of the Col des Glaciers. The subsidiary ridge is clearly and accurately laid down on the Barbey-Imfeld map. It had been intended to descend from the top direct to the head of the Glacier d'Estellette, but in a year of bare ice and falling stones this route as seen from above was far from tempting, and the descent was made by the S. ridge over rock which was in many places excessively rotten but nowhere difficult.

Time of ascent (excluding halts) . . .	8 hours 10 minutes
Time of descent to Purtud . . .	5 „ 30 „

Pennines.

LAQUINJOCH (3497 m. = 11,474 ft.). July 24, 1921. Messrs. S. L. Courtauld and E. G. Oliver, with Adolf and Alfred Aufdenblatten, spent the night in a bivouac on Hohsaas (about three hours' walking from Simplon village).

Left the bivouac at 1.50 A.M. and crossed Fletschhorn Glacier to P. 2764. Thence up the Hohletrift Glacier, which was very crevassed, to the foot of a rib of red rocks which fell from a point on the N. arête of the Weissmies immediately to the S. of the Laquinjoch, 5.20 (half-hour's halt on glacier).

Climbed straight up rocks, avoiding the couloirs. The rocks are steep and mostly rotten, with one or two difficult slabs.

Reached the N. arête of the Weissmies at the first gendarme S. of the col, 9.20.

Thence we reached the col in a few minutes, and descended by easy Hohlaub Glacier to Saas.

This route appears to be safer and better than the ordinary one, which traverses across the rocks of the S.E. face of the Laquinhorn, and apparently diverges from our route near P. 2764 without touching the Hohletrift Glacier.

Bernese Oberland.

KLEIN WANNEHORN (3717 m. = 12,195 ft.).—On July 23, 1921, Dr. O. K. Williamson, with Heinrich Fux, ascended and descended this peak by a route which differs in part from those previously described. They reached, *vid* the Märjelen Alp, the small glacier which falls away E. from the arête joining the Klein Wannehorn to the Strählhörner. They ascended and traversed the easy slopes of this to the arête of their peak not far S. of P. 3330 m. Along this ridge, by firm enjoyable rocks, they passed over P. 3330, and then traversed on the W. side of the ridge by a rock-face, which although steep and interesting was not, generally speaking, difficult. They thus reached a snow col on the arête, and ascended the western slopes by good snow, with at times a little ice, to the summit ridge a little to the N. of the top, and along this easy ridge to the highest point.

Time (excluding halts) of ascent	.	6 hours 40 minutes
„ „ of descent	.	4 „ 40 „
Total	.	11 hours 20 minutes

The portion of the climb from the time of striking the arête S. of P. 3330 to the snow col occupied about 1 hr. 20 m., and seems to be new.

EIGER (3974 m. = 13,035 ft.), BY THE E. (MITTELLEGI) RIDGE. September 10, 1921. Mr. Yuko Maki, of the Japanese Alpine Club, with the guides Fritz Amatter, Fritz Steuri, and Samuel Brawand, all of Grindelwald.

The party left the Eismeer station on September 9 at 11.30 A.M. and reached the Mittellegi ridge from the S., and then went along the ridge to a bivouac about 2 hours below the big gendarme,

P. 3687 m. of Siegfr. map, which they reached between 4 and 5 in the afternoon.

Left on September 10 at 7 A.M. and reached the big gendarme at 9, and left it at 10 A.M., whence it took them 7 hours to overcome the next 200 m. This was done by the help of a pole $5\frac{1}{2}$ m. long, which was provided with hooks, and by driving in iron stanchions, the work being greatly hampered by fresh powdery snow. The summit was reached at 7.15 P.M., and the Eiger Glacier station on September 11 at 2.30 A.M.

We are indebted for details to a letter from Amatter to Mr. G. Hasler, further to Mr. Othmar Gurtner of Lauterbrunnen, a well-known authority on the Oberland. Mr. Gurtner mentions that Amatter led throughout, ably backed up by Steuri, that a 30 m. silk rope, a 30 m. A.C. rope, and 60 m. of English reserve cord were taken, and that Burgener's axe, left in 1885 at the top of the steep pitch, which is the crux of the climb, was still there. A newspaper report says the guides received 1000 frs. per man. To Mr. Gurtner we are also much indebted for the photographs.

[This arête had previously been descended (after an attempt to ascend it):

1. In 1885 by Herrn M. v. Kuffner, with Alexander Burgener, J. M. Biner, and Alois Kalbermatten, all of the Valais.

2. In 1904 by Mr. G. Hasler, with Christian Jossi (Vater) and Fritz Amatter, both of Grindelwald.

Mr. Hasler made with F. Amatter in the same year an attempt to ascend the ridge, and repeated the attempt in 1906 with a lady (now Mrs. Hasler) and Heinrich Fuhrer. On each occasion the W. foot of the great gendarme was reached, conditions preventing further progress.

Mr. J. Grande, with Amatter in 1912, the Grindelwald guides E. and A. Steuri in the same year, and Herr Pfann and an Austrian comrade in 1921, reached the same point.

The earlier attempts of the Messrs. Hartley in 1874; of Mr. P. W. Thomas with J. M. Biner in 1878; of Messrs. J. O. Maund and Seymour Hoare in 1879, and of Messrs. J. O. Maund and J. Baumann, with Jaun, A. Maurer and Emile Rey, in 1881, are recorded in the JOURNAL. The highest point attained was the top of the great gendarme. Maund's very vivid description of the 1881 attempt in 'A.J.' xi. 35 seq. is well worth reading.

In 1885 Messrs. W. W. Graham and Emil Boss, with Ulrich Kaufmann, and the same year a party of Grindelwald guides, are believed to have reached the W. foot of the great gendarme.]

FRÜNDENHORN (3367 m. = 11,044 ft.), BY THE W. RIDGE. July 18, 1921. Herren Hans Lauper, A.A.C.B., and Max Liniger, A.A.C.Z., left a bivouac at the foot of the Fründenhorn at a height of 2567 m., on the Kandersteg side, at 6.30 A.M., and arrived at the Fründenjoch

at 8 o'clock.—From the Joch they followed the ridge, occasionally keeping on the N. side until pulled up by the first big step. The direct ascent of this step would probably be very difficult. They followed a ledge which brought them in a horizontal direction round the S. flank of the step for a distance of about 45 m., where a gully gave access to the foot of the second big step, which was climbed directly (very difficult and exposed). Less difficult rocks led to a red-brown overhang, which provided further very difficult climbing, after which the summit was reached without further difficulty. Time, Fründenjoch to the summit, $3\frac{1}{2}$ hours.

GROSSHORN, W. SUMMIT (3720 m.=12,202 ft.), BY THE N. RIDGE. July 26, 1921. The same party.—Left Obersteinberg at 1 A.M., and Schmadribrunnen at 4 A.M. After bad rock and a small patch of snow, they gained a step in the ridge, on which they found a small cairn dating back to some early attempt. A steep step in the ridge led from this point to a snow-ridge. Following the rock ridge, broken in places by steep snow-ridges, they reached the Grosshorn (W. summit, 3720 m.) at 12.10 P.M.

MÖNCH (4105 m.=13,464 ft.), BY THE N. FACE. July 23, 1921. The same party.—E. of the well-known Eis-nollen of the N. ridge is a small patch of rock. Leaving the Eiger Glacier station at 1.45 A.M., Messrs. Liniger and Lauper gained these rocks *viâ* the much-crevassed glacier and over unreliable rocks. At 6.30 they left the rocks and ascended over a steep snow-slope, a difficult bergschrund, and steep ice to a band of limestone rock which cuts horizontally through the whole N. face. The ascent of this band was very difficult; its summit, which is at the top of the big snow-slope in the middle of the picture, was reached at 10 o'clock. A steep ice-slope led further to an ill-defined rock ridge, which was followed without exceptional difficulty being encountered almost to its summit, where it was left for another similar ridge, after which the E. ridge and finally the summit were reached (4.30 P.M.).

ENGELHÖRNER, MAIN RIDGE DIRECT UP W. WALL. August 11, 1921. Major M. G. Bradley and Niklaus Kohler of Meiringen.—Leaving Rosenlaui at 3.30 A.M. and keeping to the left of the glacier stream, the party reached the rock face directly under the Frog's Head in one hour. Steep stretches of rock and traverses on grass bands led to the 'Mittagsplatte' at 7.5. From here a slight descent was made into the great water-worn couloir descending from the Gross Engelhorn, and a direct route up the watercourse was followed. Much rotten rock and some falling stones were encountered, and the angle was very steep. Scarpetti were worn, and boots carried in sacks. Kohler had perforce to leave his boots to me, and I was very glad of the rope. A better way lies farther to the left. Another descent

and a traverse led to the 'Gemsfreiheit,' the great basin of easy slabs under the Engelhorn. The final wall of some 500 ft. up to the Sagizähne had appeared from below to be at an easy angle, but was found to be very steep, with the holds sloping the wrong way. Starting from an exposed stance, one stretch of 90 ft. up a steep wall with little hold was very severe. There was no anchorage above or below, and it was with relief that I watched Kohler draw himself over the top. From here an exposed traverse of over 100 ft. led to a subsidiary ridge, which was followed to the final wall, and a long crack of sound rock led to the ridge at 11.20. Whence a pleasant scramble over the Sagizähne led to the Unter Engellücke (11.45). Descent in bad weather to the Urbachthal. The climb is about 2800 ft. high and is continuously difficult, the final wall being very severe. The best way is hard to find, but rotten rock could probably be avoided. Neither of us wishes to repeat the ascent.

M. G. B.

Bregaglia Group.

PIZ BACONE (3249 m. = 10,660 ft.), BY THE S. RIDGE. August 29, 1921. Mr. N. S. Finzi, with Josef Biner and Adolf Schaller.—Starting from Maloja, the ordinary route was followed to the col just S. of the Piz Bacone. From this point the ridge itself was followed almost continuously to the summit. The ridge lies along steep slabs, with small but firm holds, until a nearly vertical crack is reached, with very little but friction holds. There is another succession of steep slabs to a point where there are two cracks in a vertical wall, one going directly upwards and the other obliquely. We took the oblique crack. It is possible to keep outside this for about half its length (30 ft.), but then a rather difficult traverse must be made into it; two of us kept a knee in the crack the whole time. Then follow more slabs, and a short, extremely difficult crack, climbed by the leader, Schaller, which the others preferred to turn by a traverse through loose stuff below it. After a few more steep slabs, the route to the summit joins that by the chimney, which is usually taken from the above col, and leads up moderately easy rock to the summit. Total time from Maloja, approximately 6 hours.

VARIOUS EXPEDITIONS.

Graians.

ROCCIA VIVA (3650 m. = 11,976 ft.), BY THE N. FACE. September 1, 1921. Messrs. S. L. Courtauld and E. G. Oliver, with Adolf and Alfred Aufdenblatten.—Bivouac in Upper Valnontey among trees, about two hours from Cogne. Left bivouac 5.15. Up moraine to Grandcroux Glacier, 6.45. Crossed glacier to S.E. to gain well-marked rib of rocks and snow descending due N. from summit

of Roccia Viva, being a continuation of ridge dividing Grandcroux and Monei Glaciers.

Breakfasted on snow-slopes just below ridge, 9.15-9.45. Bad snow over ice on ridge, much step-cutting. Then up steep rocks, badly plastered with new snow, and very difficult, 12.10. Summit, 13.45-14.45.

Descended in S.E. direction to Roccia Viva Glacier (very easy), and by long traverse over moraine and snow to Col de Teleccio, 17.15. Cogné, 22.00.

The route described ('A.J.' xxix. 200) appears to be approximately the same from the point where the upper rocks are struck, but approaches these rocks from the other side. The route now described is free from danger of séracs or hanging glacier.

There is no real N. arête, notwithstanding the map. There is a jagged arête of rocks between the two glaciers, but a considerable space between these rocks and the upper rocks, which appear, consequently, to be more properly described as a rib, as is done in this note.

Mont Blanc Group.

MONT BLANC DE COURMAYEUR (4753 m. = 15,595 ft.), BY ECCLES'S COULOIR AND THE PEUTERET ARÊTE.—Messrs. S. L. Courtauld, G. I. Finch, and E. G. Oliver, with Adolf and Alfred Aufdenblatten. August 9, 1921.—We left the Gamba hut in fine weather at 5.15 and worked up moraine to the Brouillard Glacier (6.00). Observed that sun would strike Mont Blanc about 5.30 next morning. Put on crampons. Started up glacier 6.15, much step-cutting. Very little snow on lower parts. Breakfasted on some stones opposite the Innominata, 8.00 to 8.30. After much more step-cutting and a traverse across the N.W. face of the Innominata, necessitated by the bad condition of the upper part of the glacier, we reached our bivouac place of 1919, on some rocks close to the Col du Fresnay, at 10.00.

Left 11.30, and went up snow-slopes and rocks until near the top of Eccles's Peak, which we passed five minutes below the summit on the W. side, to reach the col between the peak and the S. face of Mont Blanc de Courmayeur. We found an indifferent bivouac place on the rocks of the S. face, just above the col, 14.30 (about 4000 m.).

It appears from Mr. Eccles's account that he traversed the peak on the E. side, and we saw from some steps that Messrs. Gugliermina had done the same thing on their ascent of the S. face of Mont Blanc de Courmayeur a few days before.

Our intention had been to climb to the Col de Peuteret and do the whole Peuteret ridge from there, ascending the Aiguille Blanche as well, if time permitted. But the heavy fall of rocks and ice which took place last winter had completely changed the aspect of the Col de Peuteret, and the ridges on each side of it, since we last

looked at them from the same spot in 1919. The col looked considerably lower than formerly, and the ridge leading to Mont Blanc de Courmayeur appeared to be entirely cut off by a great ice cliff. There is now a much larger bergschrund between the col and the Aiguille Blanche than in 1919. It would have been possible, however, to cross the bergschrund farther to the S., and so climb the Aiguille Blanche.

We decided, therefore, to try Eccles's route, which leads at first up the great couloir contained between the Mont Blanc de Courmayeur and the Peuteret arête, and gains this arête about 3 hours below the summit of M. B. de C. The main difficulty was evidently the bergschrund at the base of the great couloir, which apparently was possible, though with difficulty, only at a point to the left (W.).

The sun set behind Mont Brouillard at 17.00.

August 10.—Left bivouac 5.00 and descended a steep couloir of extremely rotten rocks, leading towards the upper part of the Fresnay Glacier. This was easy, except for loose stones, and was free from ice. We then crossed some steep slopes to the left, exposed to risk of stone and ice-fall, and reached the level part of upper basin of the Fresnay Glacier. There was no bergschrund at this point. 6.00.

The bergschrund below Eccles's couloir proved, as we anticipated, very difficult, and necessitated some skilful work on the part of Adolf. Finally it was passed at the point selected over-night, and after traversing a snow-slope to the right, exposed to some risk of stone fall, we reached the rocks on the true right side of the couloir. 7.50. Took off crampons. Went up rocks, easy, but very rotten, breakfasted 8.25–8.50, and reached last rocks bordering the couloir 10.10. (Estimated 4450 m.) Then up a snow-ridge, which after a short distance joined the main Peuteret arête a short way above Pt. 4381, and thence up the arête itself on bad snow for about 100 m. We then cut across an ice-slope to reach the rocks on the left of the Peuteret arête, which we ascended until these rocks ended a few minutes below the summit of M. B. de C. (12.50). Rocks were rotten and difficult in places, and only taken to to save time, the snow on the ridge being in bad condition. Put on crampons. Went up short remainder of ridge (very bad snow on ice), and cut through cornice on top of M. B. de C. 13.15.

Reached top of Mont Blanc in fog and high wind, 13.45.

Descended to Chamonix *viâ* Grands Mulets.

We think that the nameless peak on which Mr. Eccles bivouacked in 1877, and which certainly exceeds 4000 m., should be called the Pic Eccles. The pass between it and M. B. de C. is called by Messrs. Gugliermi Col du Mont Blanc, but with deference to these very distinguished mountaineers, we think the important name 'Col du Mont Blanc' should be reserved for a possible pass over the arête leading from Mont Blanc to M. B. de C. As the col is at the head of the Brouillard Glacier we suggest the name Col du Brouillard, corresponding to Col du Fresnay lower on the same ridge.

Pennines.

TRAVERSE OF DOM (4554 m. = 14,942 ft.) AND TÄSCHHORN (4498 m. = 14,758 ft.) FROM DOM HUT TO MISCHABELJOCH. August 6, 1921. Dr. O. K. Williamson, with Heinrich and Albert Fux.—The party ascended the Dom by the N.W. arête and descended by the S. arête. A conspicuous gendarme on this ridge was turned by the rotten and very steep rocks on the Saas face. From the Domjoch the N. ridge of the Täschhorn, then shrouded in snow, was climbed; and the descent of the last-named peak made by the S.E. ridge—the upper part very snowy—to the Mischabeljoch, use being made of the tracks of our party three days previously in an ascent by this route; whence the Täschalp and Zermatt were reached.

The very large amount of snow on the two arêtes of the Täschhorn, compared with the previous year when the same party traversed them from S. to N., should be noted, a fact interesting from the contrast to the good conditions that obtained generally on the high ridges in the summer of 1921.

Times (exclusive of halts):

Hut to Dom	6 hours 40 minutes
Dom to Domjoch	2 „ 35 „
Domjoch to Täschhorn	1 „ 40 „
Täschhorn to Mischabeljoch	3 „ 15 „
Mischabeljoch to Zermatt	5 „ 10 „

Total 19 hours 20 minutes

The expedition—especially the ascent of the Dom—was made trying, and the times materially lengthened, by a cold and very strong N.W. wind.

Bernese Oberland.

TRAVERSE OF GRÜNECKHÖRNER (S. summit, 3810 m. = 12,500 ft.; N. summit, 3869 m. = 12,694 ft.) AND GROSS GRÜNHORN (4047 m. = 13,278 ft.).—July 6, 1921. Dr. O. K. Williamson, with Heinrich Fux and a porter. From the Concordia inn the party reached the col between P. 3441 m. of the Grüneck and the S. summit of the Grüneckhörner. They ascended the latter peak by snow-slopes, and went along the rock and snow-ridge to the higher Grüneckhorn, thence to the col between that peak and the Gross Grünhorn, which they ascended by the S.W. arête. The descent was effected by the interesting N. arête, keeping throughout on the actual crest; on three steep pitches some 30 or 40 ft. high the spare rope was used. The ridge was left a little above the col between the Gross and Klein Grünhorn; but thereafter much delay was caused by the abominable conditions on the Ewig Schneefeld and the exasperating idiosyncrasies of the porter.

Times (exclusive of halts):

To col between P. 3441 and lower Grüneckhorn	3 hrs. 12 m.
To lower Grüneckhorn	1 hr. —
To higher Grüneckhorn	— 55 „
To col between Grüneckhorner and Gross Grünhorn	— 30 „
To Gross Grünhorn	1 „ 27 „
To col between Gross and Klein Grünhorn	3 hrs. —
To Concordia inn	4 „ 45 „
Total	14 hrs. 49 m.

Mount Olympus.

Mr. Marcel Kurz, surveyor, Topographical Bureau of the Swiss Service, at present seconded to the service of the Greek Government, sends us the following note:—

In August last I spent a fortnight's holiday surveying the whole range of the High Olympus with a photo-theodolite, 13 × 18 Zeiss. The map that I hope to have ready this year covers an area of about 100 square kilometres on a scale of 1 : 20,000 in the style of the Siegfried map. The heights calculated to date are as follows:

Skolion	=	Δ	2905·45 m.
Pic Venizelos	=		2917·85 m.
Throne of Zeus	=		2909·94 m.

On August 12 the chamois-hunter Christos Kakkalos and I left our bivouac at Bara, and rode in 1 hr. 25 min. up to Skolion. Here we sent the mules back and followed the main ridge in 15 min. to a point named *Skala* and marked J on the photo facing page 209 in Mr. Baud-Bovy's paper in the *Geographical Journal* of March 1921. In 7 min. more we got into the gap at K, enjoying wonderful views of the big walls surrounding the Trani-Gurna. From the breach over débris and firm rocks in 15 min. to the Tarpeian Rock where I found no traces of Mr. B.-B.'s 1913 party. In a few minutes I climbed the highest hitherto unclimbed summit of the Virgin, consisting of a succession of big slabs.

From the Tarpeian Rock, we went about 10 m. down on the E. side, crossed under the wall and reached in 7 min. the col between the Virgin and the Cock's Comb. To get down direct from the Virgin to this col would require a double rope. Following the main ridge again, we crossed the different points of the Cock's Comb and reached in 13 min. the top of Pic Venizelos, crowned by the big stoneman of the Genevese (about 1 hr. actual going from the Skolion).

In the cairn I found no cards, but the name of a hunter roughly written on a stone with the date: 20. vii. 1920, and on a big slab the name: 'Pic Venizelos,' probably engraved in 1919 by

Boissonnas. We spent $1\frac{1}{2}$ hr. on the top, enjoying the most delightful weather.

But the hardest bit was still before us. The ridge running down from the top to the deepest gap between it and the Throne of Zeus looked very bad indeed. Enormous blocks, balanced on the narrow crest, threatened to yield to the lightest touch. Kakkalos refused to try this way and we got down easily by a straight couloir, close on the right of the ridge. After 30 min. we came to another couloir that led us in 12 min. to the col. All these couloirs look worse from below than from above, owing to the stratification. From the col we followed the main ridge again and got in 15 min. to the first summit of the Throne of Zeus. The highest tower looked so bad that Kakkalos refused to go on. After a good luncheon and a pipe I roped and started to try the tower. The first bit went all right and then K. took his shoes off and followed. We crossed then to the left, on a very narrow ledge and reached the top by a crack. There we built a big stoneman, that can be seen from Litokhoron (first ascent).

With another companion I had tried to follow the whole ridge running down to the saddle between the Throne and the Pic Jacques Philippe. But K. has no experience of the use of the rope, and this traverse is certainly not easy. It is a very narrow crest, flanked by perpendicular rock walls and bristling with many half-ruined gendarmes.

So we retraced our steps, went down to the col and by the same couloir to the big shaly ledges which run almost horizontally at the base of the peaks and lead without difficulty to the glen E. of Skolion. The descent from the top of the Throne to the bivouac, took us about $1\frac{1}{2}$ hr. actual going.

According to Kakkalos, the Pic Venizelos is called *Mika* (needle) at Litokhoron, and the Throne *Stephan* (crown). Seen from this village they look really so. The Pic Jacques Philippe bears the name *Tumba*, which means hillock.

ALPINE NOTES.

'BALL'S ALPINE GUIDE,' THE WESTERN ALPS.—Copies of the new edition (1898) of this work, reconstructed and revised on behalf of the Alpine Club, by W. A. B. Coolidge, Fellow of Magdalen College, Oxford, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It covers the Western Alps from the Mediterranean to the Simplon, S. of the Rhône. Price 13s. net, post free 13s. 8d. net.

'BALL'S ALPINE GUIDE,' THE CENTRAL ALPS. PART I.—A new edition (1907) of this portion of 'The Alpine Guide,' by the late

John Ball, F.R.S., President of the Alpine Club, reconstructed and revised on behalf of the Alpine Club under the general editorship of A. V. Valentine-Richards, Fellow of Christ's College, Cambridge, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It includes those portions of Switzerland to the N. of the Rhône and Rhine Valleys. Price 7s. 6d. net, post free 7s. 11d. net.

'BALL'S ALPINE GUIDE,' THE CENTRAL ALPS. PART II.—A new edition (1911) of this portion of 'The Alpine Guide,' by the late John Ball, F.R.S., President of the Alpine Club, reconstructed and revised on behalf of the Alpine Club under the general editorship of the Rev. George Broke, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It includes those Alpine portions of Switzerland, Italy, and Austria which lie S. and E. of the Rhône and Rhine, S. of the Arlberg, and W. of the Adige. Price 8s. 6d. net, post free 9s. net.

MAP OF THE VALSESIA.—Some copies of the Map issued with the ALPINE JOURNAL, No. 209, and of the plates opposite pages 108 and 128 in No. 208, are available and can be obtained from the Assistant Secretary, Alpine Club, 23 Savile Row, W. Price for the set (the Map mounted on cloth), 3s.

THE 'CLUBFÜHRER DURCH DIE WALLISERALPEN.'—Vol. II., edited by Dr. Dübi, covering the country from the Col de Collon to the Théodule, has just been published (380 pages, with many excellent route-marked illustrations). Price 10½ Swiss frs., post free. A French edition may be expected next year. Dr. Dübi will be glad to have any errors pointed out.

THE ALPINE CLUB OBITUARY:					Date of Election.
Williams, Harry S.	.	.	.	.	1868
Clayton, Colonel E.	.	.	.	.	1872
Pendlebury, W. M.	.	.	.	.	1872
Boyson, A. P.	.	.	.	.	1873
Beachcroft, H. A.	.	.	.	.	1876
Savage, Sir G. H.	.	.	.	.	1878
Smyly, His Honour Judge	.	.	.	.	1878
Compton, E. T.	.	.	.	.	1880
Muir, Wm.	.	.	.	.	1887
Durham, Rev. Prebendary W. E.	.	.	.	.	1908
Kellas, A. M.	.	.	.	.	1911

A LEASE OF THE MONT CERVIN.—During a visit to Breuil in August last Dr. Wills and I, of course, went to call on our Hon. Member, le Chevalier Guido Rey, who has built himself a quaint and very comfortable house right facing the Cervin. Of the

party was another of our Hon. Members, Signor Bobba. Among many other interesting antiquities, M. Rey showed us a *lease* of the Mont Cervin extending from the extreme limit of the pasture-land. It would appear that it is a moot point in Italian law, so M. Bobba, a barrister, told us, how far the property of the highest alp-holder extends upward. In the case of the lease, proprietorship is evidently held to extend to the *crest* of the containing mountains. No attempt appears to have been made to enforce any rights conferred under the nine years' lease, so that I am afraid that little benefit accrued for the annual rental of frs. 50.

By M. Rey's courtesy a copy of the lease is given below :

'Location par Maquignaz Gabriel aux R^d Chasseur Michel Joseph, et Sieurs Tamone Augustin et Pession Elie Jean Baptiste, p. L. 450.00.

'L'an dix huit cent soixante six, le jour dix de Janvier, après midi, au Bourg de Châtillon, dans mon étude, par devant moi Notaire Royal, résidant en ce lieu, présents les témoins bas-nommés,

'a comparu Maquignaz Gabriel feu Antoine, né et domicilié à Valtournanche, lequel, en se portant fort pour ses cohéritiers paternels, en promettant ratification, au besoin, loue au R^d Chasseur Michel Joseph feu Pierre, né a Ayas, curé de Valtournanche, où il réside, aux S^{rs} Tamone Augustin feu Jean, né à Foresto en Valsesia, et Pession Elie Jean Baptiste feu Antoine, né à Valtournanche, où ils sont domiciliés, ici présents et acceptant, *le Mont*, soit *l'Aiguille du Mont Cervin*, qui lui appartient du côté de l'Italie, à partir du sommet de son *Pâquier* soit pâturage, jusqu'à la pointe du dit *Mont*, avec droit aux preneurs de passer eux-mêmes, exclusivement, par le dit *Pâquier* et pâturage, pour aller au dit mont, avec montures, ou à pieds, d'y faire, ou à ses environs, des baraques, cahutes ou autres constructions quelconques, de percevoir et retirer tout droit gain et bénéfice, des étrangers, voyageurs et touristes, qui passeraient sur la dite propriété, ou feraient des ascensions et voyages auprès, ou sur le dit mont, le bailleur mettant et subrogeant les preneurs, dès ce moment, en ses propres lieu, droit et place, pour tout ce qui concerne la part qu'il mesure sur le prédit *Mont*, soit le droit de passage par ce prédit pâturage pour les troupeaux et bêtes des montagnes y attenantes, ainsi que d'usage, et le droit aux bailleurs de faire des ascensions sur le prédit *Mont*, et d'y séjourner à volonté. Il est convenu que les preneurs ne pourront souslouer, ni céder à aucun autre, le bénéfice du présent bail, et que toutes constructions y faites resteront la propriété du bailleur, à la fin du bail, pour lequel, à la fin du délai sous convenu, les preneurs devront toujours être préférés à égaux prix et conditions.

'Cette location est faite pour l'espace de neuf ans consécutifs, commencés le premier du courant, et à finir à tout l'an septantequatre, moyennant le loyer annuel de cinquante livres que les preneurs s'obligent solidairement de payer au bailleur, à tout décembre de chaque année.

'De quoi acte dont j'ai lu la minute et prononcé le contenu, à voix claire et intelligible, en présence des parties et des S^{rs} Majoli Joseph feu Jacques, né à Boccioletto (Novare), demeurant en ce lieu, et Personnettaz François Jérôme feu Charles, né à Chamois, domicilié en ce lieu, témoins connus, aussi que les parties, et tous souscrits.

'Insinuation au tarif.

'Signés : Maquignaz Gabriel — Chasseur Michel — Tamone Agostino—Pession Elie—Majoli Giuseppe—Personnettaz François Jérôme.

'La présente contient sur une feuille, deux pages et demie, et de suite en dite présence l'ai signée, Je Martin Luc Lucat Notaire.

'Insinué au Bureau de Châtillon, le premier Février suivant. Reg. 5, vol. 16, fol. 127, N. 112, perçu une lire vingt-sept centimes—Vuillermin Insinuateur.'

J. P. F.

THE ITALIAN FRONTIER.—Some inconvenience was caused to our members by the existing regulations of the Italian authorities, which permit of the crossing of the frontier even by Alpine travellers only at certain points, of which a well-known pass like the Monte Moro is *not* one. Apparently to get to Macugnaga from Zermatt the official route was *viâ* the Simplon tunnel. Similar interference took place, it is understood, at the passes from the Arolla Valley.

We feel sure that it is only necessary to draw the attention of the Italian authorities to this matter for them to modify the regulations, in any case so far as they interfere with the movement of members of this Club.

English travellers receive a warm welcome in Italy, and it is quite certain that the present regulations are not intended to exclude mountaineers, who naturally only use mountain passes.

HISTORY REPEATED.—On July 14 Dr. W. A. Wills and his daughter, Miss F. Wills (with Miss Stubington and four members of the A.C.), repeated the ascent of the Wetterhorn made by the late Sir Alfred Wills sixty-seven years ago. The two ladies subsequently traversed the Cervin from Breuil to Zermatt, with Valtournanche guides.

THE MATTERHORN ROPES.—The ropes and rope-ladder on the Italian side have now all been replaced by the Valtournanche guides at the expense of the C.A.I., under the superintendence of Signor Bobba.

THE ANGLICAN SERVICES at the mountain centres which I visited this year seemed to be lacking in vigour. It was probably in a measure due to the failure to keep to the few better-known hymns in which the whole congregation could join. Moreover, on a fine day a sermon of 10 to 15 minutes is all one wants. Probably

younger chaplains would keep the people together better. The Grindelwald chaplain was not at the Bear as formerly.—J. P. F.

HOTEL, HUT, AND RAILWAY PRICES, AND GUIDE TARIFFS.—The better Swiss hotels continue to give good value—thus pension at the Bear Grindelwald, now as well fitted an hotel as can be desired, well managed and still boasting its unique head-waiter, M. Diesler, or Svengali, as he is generally called, is 16 to 18 frs. The Steinbock at Lauterbrunnen is as good as ever, with a young Boss as manager. Charges very reasonable. The Hôtel Jungfrau, Eggishorn, where 'young' Kathrein, as able a manager as his father, now rules, does you very well indeed for 17½ frs. a day—probably less *en pension*. His inn at Concordia is, however, quite dear—even reckoning the portorage; still, season is very short.

The upper hotel at Obersteinberg is quite fair, but overfilled in high season. Charges *en pension* probably low—but some charges to passing climbers *enough*; friendly people.

Fafleralp—obliging people; prices tolerable.

Stechelberg—tolerable prices; food indifferent.

Hôtel Monte Rosa, Zermatt, is as delightful as ever. How can any of us who have been there any time these fifty years think otherwise? And Mme. Imfeld makes the old place ever more a home. Pension, 17 frs. and 2 frs. lumière. In high season the waiting was slow, probably due to the inconvenient arrangements in an old building. A clever head-waiter might improve it.

Peraldo's, at Breuil, is the same pleasant place as of old. The Italian visitors are perfectly charming to English climbers, and are very keenly interested in the mountains. Pension was L. 55, which at L. 80 per £ for what they gave you was quite reasonable. My old friend Aimé Maquignaz owns the Hôtel des Jumeaux at Breuil proper. It is not so large as Peraldo's, but Aimé will make any Englishman welcome, and knows how to feed his visitors. We exchanged many reminiscences. He led Dr. Kugy up the Brenva arête, with Daniel to tell him what to do. He is now a vigorous politician, and holds strong views as to Italy's failure to *win* the Peace, and groans under the taxation like ourselves. He is very voluble on Mr. Lloyd George's *slimness*. I did all I could to put my country right in his eyes, and I can still feel the clasp of his powerful hand and see the warm look in his eyes as we left. *Au revoir, mon ami!*

Railway fares have advanced quite 50 per cent.

The charge in the Club huts is, for members, much the same (about 1 fr.), but the charge for non-members has, very properly, been increased to as much as 4 frs. The charge for a small bundle of wood is now 3 to 4 frs. The huts, with a resident *gardien*, are well kept. The guide Jakob Rumpf, himself a first-rate climber, *gardien* at the Gspaltenhorn hut, may be singled out as a model, and I found others obliging and anxious to assist. The Strahlegg hut

—the path to which is at one point difficult, indeed dangerous, for a loaded porter, or all save tolerably experienced people—is frequently quite full. It has no permanent *gardien*, which leads to confusion.

Guide tariffs in Switzerland have been increased :

Under 20 frs., by 50 per cent.

Over 20 frs., by 33½ „

The Italian tariff for the traverse of the Cervin is L. 320.

The Zermatt porters claim, under an absurd paragraph in the Official Tariff, an addition of 20 frs. to the tariff for a pass 'where they descend into another valley.' I could not quite see how they could cross any pass without doing so ! It is as well not to give in to this reading—one can make the *pourboire* what one likes. Now that Dr. Alexander is dead, there is apparently no authority there who is conversant with the usages. No doubt Dr. Hermann Seiler will shortly get as firm hold of such matters as he already has of the affairs of his great company. J. P. F.

DR. COLLIE'S 'SUMMARY OF MOUNTAINEERING IN THE HIMALAYA.' 'A.J.' xxxiii. 295 *seq.*—Mention should be added of Mr. Freshfield's tour of Kangchenjunga in 1899, when a height of over 21,000 ft. was attained. ('Round Kangchenjunga.' Arnold, 1903. Illustrated with Signor Sella's magnificent photographs.) Of Dr. Jacot Guillarmod's journey of 1905, when an attempt was made on Kangchenjunga, mention should be made. Signor Bobba draws attention to Signor Mario Piacenza's journey of 1913 to Kashmir (Nun Kun and Z districts). The narrative will be found in the *Rivista del C.A.I.* xxxiii.

A MOUNTAINEERING CARDINAL.—Signor Bobba (and subsequently Dr. Coolidge) writes that for the first time the '*porpora cardinalizia*' has been bestowed on a great mountaineer, Monseigneur Achille Ratti, who also becomes Archbishop of Milan. M. Ratti did, when younger, many great ascents, such as the Cervin, Monte Rosa from Macugnaga, Mt. Blanc, and opened the route by the Glacier du Dôme. His essays in the *Bollettino* for 1899, and the *Rivista* for 1890, are well worthy of remark.

LA BÉRARDE.—The road has now been finished, and the journey from Grenoble by car done in 3 hours.

THE MATTERHORN.—The 1920 triangulation of the Zermatt Valley gives the height of the Swiss summit as very closely 4482 m., and makes the Italian summit 80·59 m. W., and 1·10 m. lower.

THE BEERENBERG (8,350 ft.), JAN MAYEN ISLAND.—The first ascent of this was made by an expedition led by Mr. J. M. Wordie, of St. John's College, Cambridge, a member of the last Shackleton Antarctic Expedition. M. le Professeur Dr. Paul Louis Mercanton of

Lausanne, the well-known glaciologist, was also of the party. Mr. Wordie read a paper on the ascent before the R.G.S. on November 21. A map of the mountain is to be found in Stieler's Hand-Atlas.

VISITORS TO THE HUTS OF THE S.A.C. IN 1920:

Bétemps	1051
Schönbühl	706
Dom	210
Weisshorn	93
Mountet	492
Bertol	752
Chanrion	463
Panossière	360
Orny	1142
J. Dupuis	1078
Britannia	1137
Solvay	221
Mutthorn	1537
Oberaletsch	178
Koncordia	1189
Finsteraarhorn	421
Strahlegg	357
Gleckstein	752
Damma	233
Clariden	1298
Fridolin	497
Boval	1572
Tschierva	642
Sciora	56

ON THE USE OF THE TERMS 'RIGHT' AND 'LEFT' IN DESCRIBING ROUTES.—Unfortunately, it is rather late in the day to suggest that any change should be made in the meanings now applied to the words 'right' and 'left' when used for denoting the banks of a glacier or the sides of a couloir. Still, there can be no harm in pointing out that to use them in the sense adopted in the case of fresh-water rivers involves a false analogy.

Instructions for the navigation of fresh-water rivers are of greater necessity to those who go down stream in the first instance than to those who make their first journey upstream, because there is much less difficulty in avoiding dangers when stemming the current. Consequently, the 'right bank' means the bank that is on one's right-hand side when one is facing the sea.

In the same way the terms 'starboard hand' and 'port hand' are used in the sense most convenient to those who require sailing directions for a tidal estuary. Strangers require these directions, but natives do not; and strangers have to enter an estuary before they can sail out of it. So the 'starboard bank' or a 'starboard hand buoy' mean the bank or buoy on one's starboard hand when

one is facing away from the sea, that is, in the opposite direction to what is the case with fresh water.

In each instance the terms are used in the most convenient sense,—that is, they are applied in the direction for which information is of the greatest value. The same should be the case with mountains. A mountain has to be climbed before it can be descended, and so 'right' and 'left' should be used in the ascending sense. This is the logical and most convenient, and therefore the clearest method, and it is analogous to the practice universally adopted for both tidal and non-tidal rivers. No ambiguity results from the ordinary custom of drafting sailing directions for a river without reference to the points of the compass, but the use of the terms 'right' and 'left' in their unnatural sense has caused confusion in the case of mountains, with the result that it has been necessary to resort to the use of the points of the compass. But it is easier to visualise a locality from a written description if the words 'right' and 'left' are used.

P. J. H. UNNA.

DR. and MME. VISSER with FRANZ LOCHMATTER leave in February next for a mountaineering expedition in Kashmir.

MITTELLEGI ARÊTE.—The Grindelwald guides have determined to build a hut to contain 12 people near the Great Gendarme, in order to facilitate the ascent of the Eiger lately made by this route. They are subscribing 30 frs. or equivalent work each, and will welcome further subscriptions.

ACCIDENTS IN 1921.

News reaches us from Canada of a tragedy which occurred on Mount Eon last summer. Mount Eon (10,860 ft.) and Mount Aye (10,640 ft.) are two striking rock-peaks situated a little to the S. of Mount Assiniboine; they attracted considerable attention from the occupants of the camp of the Alpine Club of Canada at the foot of Mount Assiniboine in 1920, but were not visited till the last days of the camp, when a party, which included Mr. A. W. Wakefield and Mr. L. Lindsay, made an unsuccessful attempt on Mount Eon.

In order to facilitate visits to the district, Mr. A. O. Wheeler, the Director of the Club, has now made this camp a permanent one, with a regular trail from Banff, about fifty miles in length, and four subsidiary camps on the way, where sleeping accommodation and provisions can be obtained. Early in July 1921 Dr. Winthrop E. Stone, President of Purdue University, Lafayette, Indiana, left Banff with his wife, with a view to making a second attempt on the same mountain. They started from the Assiniboine camp alone on July 15, taking sleeping-bags, and after spending two

nights at a bivouac, attacked the peak on the 17th. They had reached a point not very far below the summit when Mrs. Stone stopped, and her husband went on by himself to prospect the route. It is now established that he had almost completed the ascent when the accident took place. There was no sound or cry, but Mrs. Stone saw the body falling. It was then about 6.30 p.m., and she spent the night where she stood. On the 18th she started to descend, and got down several hundred feet, passing the spot where Dr. Stone's body was lying. On the 19th she continued the descent, believing that her husband was still below her, and finally reached a ledge, from which she could neither advance nor retreat.

On the same day some other visitors at the camp went to the bivouac with provisions, Dr. Stone having requested them to do so if he had not returned; they saw no signs of the climbers, but seem to have felt no anxiety. On the 20th a packer named Reno climbed on to the mountain alone, but could find no traces of them, and on the 21st a message was sent to Banff asking for help.

Rudolph Aemmer, summoned by telephone from Lake Louise, where he had just returned from a climb, arrived at Banff by car at 1.30 a.m. on the 22nd, and started again at 6 with a small body of volunteers, hardy men, though untrained in climbing, on the long ride to the Assiniboine camp, which was reached at 7.30 p.m. The story of the rescue, a work of difficulty and danger in itself, and which also involved prolonged exposure and hardship to all concerned in it, is too long to be told here. It must suffice to say that Mrs. Stone was found and brought down on July 24, Aemmer carrying her on his back for a large part of the way—a great feat of strength and skill. She had been entirely without food, and depended for water on a cushion of moss on the rocks, in which enough moisture accumulated every three or four hours to provide a small drink. On July 29 she was brought to the nearest intermediate camp, and ten days later was able to proceed to Banff. Physically, she seems to have suffered surprisingly slight ill-effects from her terrible ordeal.

A second search party, strengthened by Conrad Kain, Edward Feuz, and Messrs. Lindsay and A. H. McCarthy, returned to Mount Eon on August 5. The recovery of the body proved to be even a severer task than the rescue of Mrs. Stone, and taxed their powers to the utmost. It was successfully accomplished after two days of strenuous toil, during which the workers were exposed to an incessant fire of falling stones.

Dr. and Mrs. Stone were active and popular members of the Alpine Club of Canada, and were present at the camp of 1920, where Mrs. Stone was the first lady to make the ascent of Mount Assiniboine. Dr. Stone had climbed in many parts of North America, and during several seasons both he and his wife shared in many of the expeditions—mostly new ascents—carried out by Mr. and Mrs. McCarthy and Conrad Kain in the Purcell range.

REVIEWS.

A Climber's Guide to the Rocky Mountains of Canada. By Howard Palmer and J. Monroe Thorington. Published for the American Alpine Club by the Knickerbocker Press, New York, 1921.

THE reflections which are at once suggested by the appearance of a book with this title are neatly stated by the authors in the opening sentence of their excellent Preface: 'Although the time is by no means ripe for the making of a complete Climber's Guide to the Canadian Rockies, a summary of the existing information can scarcely fail to be of service.' The first of these propositions is so obviously true that there is no need to dwell upon it; and we are in most cordial agreement with the second. Probably no other method of exposition could have set forth so clearly and effectively what has been accomplished and what yet remains to be done in the region under consideration. That region is the Rocky Mountains proper, the main range which forms the Continental Divide, with a few groups immediately adjacent to it; the book does not include the Selkirks, or the other ranges lying farther to the W. On the other hand, it takes in the whole of the main chain from the United States boundary to Mount Sir Alexander and Jarvis Pass, beyond which the range probably presents no further features of Alpine interest; in any case, no information concerning it is now available.

The whole distance covered is nearly 450 miles, about what the air-line of the Alps from the Col di Tenda to the Terglon would be if they were straightened out. More than 460 peaks are dealt with, of which all, except about twenty, have now received names, and all, except about a dozen in the near neighbourhood of the Canadian Pacific Railway, are over 9000 ft. in height. It is clear that very large additions will have to be made to the list as time goes on. More than 200 peaks have been climbed, between forty and fifty by two or more different routes. The range is divided up into twenty-four sections, and the general method of treatment is like that of our own Climbers' Guides, but two points of difference will be noticed. First, the peaks in each section are placed in alphabetical order. This was probably unavoidable in the present state of knowledge, but it is to be hoped that in future editions a topographical arrangement, in at least some sections, may be found practicable. Secondly, there is no mention of passes. The Canadian climber has as a rule no use for passes, because there is nowhere for him to go on the other side; still, this will not always be the case, and even now Abbot's Pass and one or two others in the Lake Louise section might well have been spared a few lines.

Sections 1 and 2, which extend northward from the U.S. frontier for 120 miles, apparently present only minor attractions, possessing but one small glacier and one peak over 10,000 ft.; the snow and

ice region begins with the three groups which were, one may almost say, discovered, a few years ago, by Mr. A. O. Wheeler and his colleagues on the Alberta-British Columbia Boundary Commission.¹ These groups have already (1919) received hasty visits from two climbers, and the highest peak in each of them has been reached, but they are still mostly untrodden ground, and practically all our knowledge up to this point depends on the Report and Maps of the Commission, without which this book could hardly have appeared in its present form. (It may be mentioned here that the authors have also had access to the still unpublished results of the Commission as far N. as the Forbes-Lyell group, a privilege the value of which they very cordially acknowledge.) In Section 6 (Assiniboine group) we reach much better-known country; nearly the whole of the region comprised in Sections 6-12 is within easy reach of Banff or Lake Louise, and of the 195 peaks contained in it 133, including all the most important ones, have been ascended, many of them repeatedly; in the Lake Louise section itself, out of fifty-one peaks practically none worthy of consideration remain unclimbed.

We come next to the Freshfield, Lyell-Forbes, and Columbia groups. Our authors write with enthusiasm of the latter as 'the scenic climax of the Canadian Rockies,' and the three form together an almost unbroken mass of glaciers, snow-fields, and lofty mountains to which the rest of the range can show no parallel. All this country was opened up by Dr. Collie and his companions in the great expeditions of 1898 and 1902, and surprisingly little seems to have been added to our knowledge of it since those strenuous days. It is noteworthy also that exploration on this line has not been carried any farther; the outlying Stephens range, mentioned in an earlier section, is still untouched, and—what is still more remarkable—so is the great area, here called the Wood River group, situated W. of the Columbia group and S. of Fortress Lake. It contains at least five peaks between 11,000 and 12,000 ft., but is still entirely unexplored, and 'constitutes the last block of *terra incognita* of outstanding interest to the mountaineer that remains in the Canadian Rockies.' Much new light should be thrown upon it by the maps accompanying the second Report of the above-mentioned Boundary Commission, which we may hope to receive shortly.

It is impossible to deal in detail with the complicated regions which follow. The district between Fortress Lake and the Yellowhead Pass has been the scene of much recent activity, but is still imperfectly known. The sections dealing with it owe much to Mr. Howard Palmer's personal knowledge, and contain many valuable hints which would well repay following up. Beyond the Yellowhead Pass our knowledge, except in the immediate neighbourhood of Mount Robson, is even more disconnected. It has

¹ *A.J.* xxxii. 398.

been well and carefully summarised. Here, again, we must look forward to the maps of the Boundary Commission to give it coherence. We cannot help thinking, by the way, that the authors in their division of the book into parts would have done well to follow the Commission, and make the Yellowhead Pass the dividing line between Parts II. and III. Their reasons for making the division at Fortress Lake seem inadequate. However, this is a matter of form rather than of substance.

Such a book as this is written with the very object of making itself obsolete as quickly as possible. It is a standing challenge to ambitious climbers. The formula 'No information,' which proved so magnetic when our own Climbers' Guides were appearing, is not employed in this volume, but the invitation is scattered broadcast throughout its pages. 'Mt. Alberta, 11,874 ft. . . . As yet unclimbed, but will probably turn out to be one of the most difficult rock peaks in the Canadian Rockies. Its appearance is extraordinarily grand and forbidding from all sides.' 'Mt. Geikie, 10,854 ft. . . . This mountain has the appearance at close quarters of being exceedingly difficult.' What could be more alluring? Let us hope that there will be capable climbers forthcoming to supplement the further work of the Boundary Commission, and that by the time the third Report of that body is ready our authors will have abundant material on hand for a second edition. In the meantime we heartily congratulate them on having produced a work of the greatest value to all who are interested, from any point of view, in Canadian mountaineering.

Alpine Ski-ing at all Heights and Seasons. By Arnold Lunn. Methuen. 1921. 5s.

This little book is an admirable attempt to convert ski-runners into mountaineers, but it is also well worthy of the study of the ordinary summer mountaineer. Mr. Lunn is himself an energetic combination of the two, and is an eloquent apostle to both. He claims that ski-running is an all-the-year-round sport; for instance, that Monte Rosa should never be climbed on foot, since you can run down from the Sattel to the Bétemps in 20 minutes on ski.

He very rightly points out that for the ski-runner the danger zone begins almost at the hotel door, and that it takes as much snowcraft to pick the safest and best ski-line up the Faulhorn as to find the way in summer up Mont Blanc.

Mr. Lunn devotes a chapter to the much disputed point whether one should rope on skis. Some fatal accidents have occurred recently to unroped parties. Mr. Lunn appears inclined to look for excitement (p. 95), which may possibly be justifiable to a master like himself. Generally speaking, winter mountaineers of experience incline to keeping off crevassed glaciers until the winter is so far advanced that one may reasonably count on the bridges being thick enough.

A carefully considered chapter is devoted to what is the great danger of winter expeditions—viz. snow avalanches. During his investigations he has had to consider the reasons underlying the merging of snow into ice.

The whole chapter should be read with the closest attention, for there is scarcely a mountaineer who has had the all-seasons experience of the author.

The whole book is written with a very refreshing enthusiasm, and should make many disciples.

CORRESPONDENCE.

THE LATE ALFRED G. TOPHAM.

To the Editor of the ALPINE JOURNAL.

DEAR MR. EDITOR,—In the issue of November 1920, a succinct notice of the work achieved by this enthusiastic and accomplished climber was given, but exigencies of space precluded many personal touches and characteristics. May I be permitted to supplement your remarks with some information, gleaned from the best authority?

Alfred Topham, at the age of 18, fresh from Harrow, by chance found himself at Chamonix in 1880. On seeing Mont Blanc, he went up it next day. The remembrance of this ascent was often a source of amusement to him later. Thus, the joys of mountaineering were revealed to him, and love of the mountains and a passion for them became marked features of a strong character and striking personality. After climbing many of the well-known mountains, he was elected to the Club in 1886.

The years, however, of his notable achievements were from 1889 to 1895, and a list of new ascents and new routes is given in your obituary notice. The work that Topham then did was mostly in a district less well known than it is now—the Valpelline and the important ridge which lies between it and the Valtournanche. Thanks to him and his pioneering efforts, it is well mapped out.

Being impressed with the importance of photography, he took it up in 1887. At that time it was in its infancy for amateurs, and he carried a 28-lb. camera with him. In those days glass plates alone were in use, and snapshots were things undreamed of. Developing, printing, and enlarging his photographs himself, he constructed laboriously those excellent panoramas which were published in the 'A.J.' vol. xvii. pp. 551–555. He always carried an aneroid barometer, and made careful notes of the heights he reached. So authoritative were Topham's results that they proved invaluable when the new Ball's Guide was published, and to the Italian Alpine Club when revising the N. Italian map for the Italian Government. His work was gratefully acknowledged, and he was warmly thanked

by all who benefited by it. Originally, he had a small but very powerful telescope, but later acquired a pair of Zeiss glasses as soon as they came out. He would stand for hours happily reconnoitring; so, before he started, he knew exactly what he was going to do.

After the exploration of the Valpelline, Topham turned his attention to the Arolla district, and made several new ascents and some new routes. It is difficult to signal out one which reflects more than another Topham's special characteristics; but allusion may be made to the arête of the Dent Perroc, which he attempted several times in successive summers before he defeated it.

Gifted with an acute sense of locality, a power of accurate observation, great physical endurance, an instinctive knowledge of ice and snow, very sure-footed, and complete fearlessness, he was well equipped as a leader; and, his climbing friends, Ruxton, Stonham, Groves, and others, were prepared to follow him anywhere.

One personal peculiarity, which he shared with his brother Harold, may be referred to. He had a curious power of hanging on to cracks in rock-faces by the tips of the fingers. Both in him and in Harold, the last joints were noticeably enlarged. They could trust their whole weights to the finger-tips.

These remarks may serve to recall and perpetuate the personality and character of Alfred Topham. Of him it may be said that 'he turned to the mountains as a child to its mother; their grandeur restored proportion to his eager spirit, and this instinct was more wholesome than even he knew.'

I am,

Yours, etc.,

A. H. TUBBY.

'CLOCKING A ZERMATT GLACIER.'

To the Editor of the ALPINE JOURNAL.

DEAR SIR,—You were good enough to print an article from me in your last issue on '“Clocking” a Zermatt Glacier,' and as far as the movements recorded are concerned, the article stands. But I expressed some surprise at the way my stone cairns were still found to be standing, and even the large flat stones marking every 25 mètres with the small stone on their backs as I had left them two years previously. I have received a letter from Mr. De Villiers-Schwab, of New York, who tells me that the reason why they were still standing is because he and his guides spent some considerable time on the glacier when storm-bound, a few weeks previous to my visit, rebuilding the cairns, and replacing the flat stones after cutting them out from the ice, into which they had sunk some distance. From details which he has kindly furnished me, it appears that all the cairns had become fairly widely scattered before he and his party reassembled them, and they evidently had, and no doubt are having, a fairly stormy

time on their measured progression towards eventual engulfment below. I therefore venture to reiterate the hope that anyone with a little time on his hands at the Bétemps hut will cast a friendly eye on these time-recorders and build them up wherever necessary once more into self-respecting cairns.

Yours faithfully,

A. C. MORRISON-BELL.

THE AMERICAN MEMBERS OF THE A.C.

To the Editor of the ALPINE JOURNAL.

DEAR CAPTAIN FARRAR,—You may be interested to hear that a number of us have gotten together as the 'American Members of the Alpine Club,' and held a very successful little dinner in May. As a result of this, we expect to continue holding informal dinners once or twice a year, and, in general, keep in touch with each other. There appear to be some sixteen or seventeen American members of the Alpine Club, of which the following eleven already display active interest in getting together :

Messrs. Freeman Allen, Alston Burr, J. W. S. Brady, I. de Bruyn, Charles E. Fay, J. E. Fisher, V. A. Fynn, Leroy Jeffers, A. H. McCarthy, William Williams, and myself.

Mr. Williams is Chairman ; and, by the way, he is over climbing in Switzerland this summer, where you are likely to meet him if you visit Zermatt this season.

Sincerely yours,

11 Broadway, New York,
August 3, 1921.

HENRY B. DE VILLIERS-SCHWAB.

ACONCAGUA.

House of Lords,
June 16, 1921.

DEAR MR. YOUNG,—Pray forgive my delay in replying to your letter, for which I am much obliged. Though on reading it I felt pretty sure that you were right, and that Aconcagua is on the Argentine side of the frontier, I waited to consult, first, the latest good map I could find, and, secondly, Sir Martin Conway. I have now consulted these two high authorities, who concur in thinking the peak is in Argentina. Indeed, my own recollection on the point was so definite, from my sight of the peak from the valley followed by the railway, that I don't know how I came to make the mistake in my book. I will correct it if another edition is called for.

With thanks, and regrets that I did not hear your Paper, believe me,

Sincerely yours,

Sidney Young, Esq.

BRYCE.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, W. 1, on Tuesday, March 1, 1921, at 8.30 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, Mr. Francis George Smith Clerihew and Mr. Noel Rooke.

The PRESIDENT said :—I regret to have to announce the death of Mr. J. C. Hawkshaw, a very old Member of the Club, who was elected in 1860. He died on February 15 last. In his younger days he did a good deal of climbing in the Alps, and distinguished himself in athletics at Cambridge. He was President of the Institution of Civil Engineers in 1902, and in 1915 he gave up his professional work and retired to his country-seat near Hindhead. His death means a great loss to the Club.

The PRESIDENT reported progress in connexion with the Mount Everest Expedition, and stated that the A.C. subscriptions amounted approximately to £1600, but that so far only eighty-seven Members had subscribed. The appeal for funds had now been out some time, and it was hoped that those Members who had not yet subscribed would do so at the earliest possible moment.

The Honorary Secretary and Treasurer, Mr. J. E. C. EATON, presented the accounts for 1920. Mr. Hugh E. M. Stutfield proposed the adoption of the accounts as presented, which was seconded by Mr. H. V. Reade and carried *nem. con.*

Dr. CLAUDE WILSON suggested that a Supplementary Index to the ALPINE JOURNAL embracing Volumes XVI. to XXX. should be undertaken.

Sir ALEXANDER KENNEDY proposed a vote of thanks to the Auditors, Messrs. Ralph S. Morrish and Reginald Graham, for their work in connexion with the audit, which was duly seconded and carried with acclamation.

Owing to illness, Mr. Harold Raeburn was unable to read his Paper entitled 'The Southerly Walls of Kangchenjunga and the Ratong Pass,' and in place of this the President showed lantern slides of the photographs taken by Mr. Raeburn on his expedition last summer, and gave a description of the routes followed by Mr. Raeburn and those of former explorers round Kangchenjunga and Kabru.

A discussion followed, in which Mr. D. W. Freshfield and Sir Francis Younghusband took part.

The PRESIDENT afterwards showed several photographs which had been taken by Dr. A. M. Kellas at altitudes of 16,000 and 18,000 ft.

respectively in December last, showing certain un-named big peaks to the N. of Mount Everest, which the President thought might prove to be almost as high as Mount Everest. These mountains had been seen by the members of a former expedition, when one guide gave it as his opinion that they were higher than Mount Everest.

The PRESIDENT said that the route that would be taken by the expeditionary party this year would bring them to within about 10 miles of the unknown peaks shown in the photographs of Dr. Kellas, so that their exact measurement would certainly be ascertained, but he was doubtful whether they would be found to be higher than Everest.

The proceedings terminated with a vote of thanks to the President, which was carried with acclamation.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, April 5, 1921, at 8.30 p.m., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The PRESIDENT said :—With great regret I have to announce the deaths of four Members of the Club.

Mr. William Cecil Smyly, K.C., was elected a Member in 1878, and he died on March 4 last. Educated at Harrow and Cambridge, where he had a considerable reputation as an oarsman, he was called to the Bar at the age of twenty-one in 1865. He did a good deal of climbing in his younger days.

Mr. G. G. Ramsay, brother of our Member, Sir James Ramsay, Bart., was elected in 1876, and died on March 8. He had a very distinguished career, was a great scholar and no mean athlete and sportsman. He held the Chair of Humanity in Glasgow University from 1863 to 1908. He was an original member of the Scottish Mountaineering Club, served as President of that Club during the years 1889–92, and was an enthusiastic mountaineer.

Mr. E. T. Compton was elected in 1880, and he died last month at his home in Feldafing, Bavaria. Living and working among the mountains for over fifty years, during the greater part of which he was climbing as well as painting, he acquired a reputation as one of the finest painters of mountain scenery of his day. He very generously presented the Club with several of his pictures which now adorn the walls in our Reading Room. His death has caused a gap which it will be hard to fill.

Lastly, I have just been informed of the death of another old Member, Mr. W. M. Pendlebury, who was elected in 1872. Of his climbing exploits probably the most remarkable was the first ascent of Monte Rosa from Macugnaga in 1872. He was a great lover of the mountains, and was very active in his younger days.

I have now to announce that a sum of £2792 has been received from 237 subscribers to the Mount Everest Fund, and as the utmost that could have been expected was £3000, I think the Club has every reason to be proud of its contribution to this Fund. You

will be interested to hear that both Mr. Raeburn and Colonel Howard Bury are on their way to India. Mr. Mallory sails in a day or two, and the rest of the party will follow shortly. Owing to an unsatisfactory medical report, Captain George Finch has been obliged to relinquish his place on the expedition this year, but it is hoped that his health will improve sufficiently to allow of his going out next year. A substitute for Captain Finch has been found in Mr. G. H. Bullock, a Member of this Club, and an old school-fellow of Mallory's. Mr. Bullock has done a great deal of climbing for a man of his years, and I am told that he had a great reputation as an athlete when at Winchester. I believe the choice is an admirable one. The stores for the party with the tents and other equipment were despatched a day or two ago.

I should now like to call your attention to the great and admirable work which has been accomplished by Mr. Sydney Spencer in arranging and cataloguing the Photographic and Lantern Slide Collections of the Club. This has been no small task, and I am sure that Members will desire to pass a very hearty vote of thanks to Mr. Spencer for his labours.

Sir ALEXANDER KENNEDY then proposed that a hearty vote of thanks be accorded Mr. Sydney Spencer. This was seconded by Mr. C. H. R. Wollaston and carried with acclamation.

Mr. J. A. OSLER read a Paper entitled 'A First Visit to the Rockies,' which was illustrated by lantern slides.

At the conclusion of the Paper Mr. A. L. MUMM showed some slides of the Mt. Freshfield group and others which he had taken last year, after which Mr. Osler showed some coloured slides.

A discussion followed, in which Mr. Hugh E. M. Stutfield, Mr. G. A. Solly, and the President took part.

Mr. SOLLY mentioned that he had recently been informed by Mr. Wheeler that the summer camp of the Canadian Alpine Club would be held at Lake O'Hara this year, and that it was hoped that some Members of the Alpine Club would contrive to attend.

The PRESIDENT said :—I know of no more beautiful lake than Lake O'Hara, both for colouring and scenery, and I am quite sure no one would regret the journey out there. I now ask you to pass a very hearty vote of thanks to Mr. J. A. Osler for his most interesting Paper and the very beautiful slides he has shown to us this evening.

The vote of thanks was carried with acclamation and the proceedings terminated.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, May 3, 1921, at 8.30 p.m., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The PRESIDENT said :—First of all, I have to announce the death of Mr. H. A. Beachcroft, which has been recently reported to the Honorary Secretary. Mr. H. A. Beachcroft was elected a Member of the Club in 1876, and I believe before that date he did a very

considerable amount of climbing in the Alps, but I regret I cannot give you any details.

The following Resolution, of which notice had been duly given in the Secretarial Circular dated April 16, 1921, was proposed by Mr. J. J. Withers and seconded by Mr. Reginald Graham.

Resolved that the following addition be made to Rule 6, viz.—

‘Provided that an Ordinary Member who, on election, is an Officer of the Indian Army serving in India, shall pay an Entrance Fee of One Guinea only.’

This Resolution was then put to the meeting and carried *nem. con.*

The PRESIDENT announced that a sum of £3077 had been subscribed to the Mount Everest Fund by Members and others.

Mr. R. W. LLOYD then read a Paper entitled ‘An Old and a New Climb,’ which was illustrated by lantern slides. A discussion followed, in which Sir Edward Davidson and Mr. Geoffrey Howard took part.

The PRESIDENT said :—Mr. Lloyd seems to have accomplished some very good climbs in doubtful weather. Of course, anyone who knows anything about the Dent Blanche knows how bad it can be in bad weather. It can be very savage, but after some weeks of fine weather it can also be quite easy. It is an extremely long expedition, and therefore the climb seems to me to be one which should only be attempted in very fine weather. I now ask you to pass a very hearty vote of thanks to Mr. Lloyd for his most interesting Paper, and for the fine slides he has shown us.

The vote of thanks was carried with acclamation and the proceedings terminated.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, June 7, 1921, at 9 p.m., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, Mr. Sergei de Vesselitsky, Lt.-Col. W. W. Foster, D.S.O., and the Rev. J. F. Medley.

The PRESIDENT said :—The next business is to announce the deaths of those Members who have died since the last meeting.

The first is that of the Rev. Prebendary W. E. Durham who, as you probably all know, met his death last Whitsuntide whilst climbing Tryfan, in North Wales. We all sympathise very much with the family. It is seldom that one has to announce here the death of any Member through an accident, but we all know that accidents can happen at any moment, and that we cannot always guard against them. It is particularly unfortunate that Prebendary Durham should have been killed in this way. He was a comparatively old man when elected to the Club in 1908, having nearly reached his fiftieth year, but he was, nevertheless, extremely active. He was known to many of you personally, and he took the greatest

interest in the welfare of the Club. He was Prebendary of Exeter Cathedral and Rector of Trusham, Devonshire.

The other death I have to mention is that of an older Member of the Club, namely, Dr. C. B. Heberden. He was elected in 1892. He took the greatest interest in the Alpine Club at Oxford, and the climbers there. I was quite recently at a meeting of the Oxford Alpine Club which he attended.

I have now to submit for your approval the arrangements for the Winter Dinner as set out in the circular dated May 21, 1921. Thereupon Mr. C. H. R. Wollaston proposed, and Mr. J. J. Withers seconded, that the arrangements be approved. This was put to the meeting and carried *nem. con.*

The PRESIDENT said :—I have been asked to mention that Mr. H. Pollard, of Calgary, Alberta, Canada, has presented to the Club, through Mr. A. L. Mumm, a very fine photograph taken in the Canadian Rockies. I am sure the Club will be delighted to accept this photograph, which is now on view in the Secretary's room, and the Honorary Secretary has been requested to convey to Mr. Pollard our united thanks for his gift.

Before I call upon Mr. Sidney Young to read his Paper, I should just like to give you the latest information concerning the Everest Expedition. A telegram has been received from Colonel Howard Bury, saying that the expeditionary party has now crossed into Tibet. They started from Darjeeling about the middle of May, the advance party proceeding up the Teesta Valley in order to correct the Sikkim maps, and the others up the Chumbi Valley. It is evident that they have now crossed the snow-pass into Tibet, so that by this time they should be well on their way to Mount Everest. From Kampa Dzong to Tingri will take them about a week, possibly a little more, but from now on we should get periodical communications, which they can send by telegraph. Dr. A. M. Kellas has been doing a tremendous amount of work out there, and has sent me some excellent photographs.

Mr. SIDNEY YOUNG then read a Paper entitled 'A Traverse of the Weisshorn in 1920,' which was illustrated by lantern slides. After the Paper he showed the following slides of the Andes :

1. The Inca Lake, about 10,000 ft. above sea-level.
2. Train entering tunnel on the Chilian side of Andes,
12,000 ft.
3. Río Blanco Valley, Chilian side.
4. Puente del Inca, 8-9000 ft. up.
5. Penitentes, 14-15,000 ft.
6. Looking W. from Puente del Inca.
7. Looking E. from Puente del Inca.
8. Earth pyramids, Horcones Valley.
- 9)
- 10) Aconcagua from Horcones Valley.
- 11)

Mr. C. F. Bennett and Mr. R. W. Lloyd took part in the discussion which followed ; this was eventually closed by the President, who proposed a hearty vote of thanks to Mr. Young for his Paper and the very fine views he had shown, which was carried with acclamation.

ADDENDA AND CORRIGENDA TO VOL. XXXIII.

P. 292, line 14, for *the late Commissioner of Lahoul (Mr. Hughes)* read *Mr. G. C. L. Howell, the late Deputy Commissioner of Kulu.*

P. 323, line 4 of footnote, for 448 read 449.

P. 324, last line, for *le* read *de*.

P. 330, footnote, for *Arvers* read *Duthaut*.

P. 335, line 5, insert *de* before *Rochas*.

P. 335, line 4, for 1776 read 1777.

P. 335, line 31, for 193 read 194.

P. 335, line 32, for *dît* read *assuré*.

P. 391, line 13 from bottom, for 151 read 145.

P. 458, line 9 from bottom, read *Oberschallhjoch*.

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THE 1921 MOUNT EVEREST EXPEDITION.

By LIEUT.-COLONEL C. K. HOWARD-BURY, D.S.O., Chief of the Expedition.

(Read at the Joint Meeting of the R.G.S. and the Alpine Club at the Queen's Hall, 20 December 1921. Maps at end.)

OF Mount Everest and the country that surrounded it very little was previously known, and the maps of that district were vague and inaccurate. Mount Everest was discovered and measured from the plains of India from a distance of about 150 miles about the year 1850, but it was not given the name of Mount Everest until 1858, in honour of Colonel Everest, who was the Surveyor-General in India at the time of its discovery. The top of it can be seen from Sandak-phu and Phallut, places near Darjeeling, at a distance of about 90 miles, where it appears between the peaks of Makalu. In 1905 the late General Rawling and Colonel Ryder, the present Surveyor-General of India, following the course of the Brahmaputra, climbed up to the southern watershed of the Brahmaputra and had a distant view of Mount Everest from the north from about 80 to 90 miles. From this view-point they were able to see a great distance along the chain of the Himalayas, and were able to say that there was no doubt that it was the highest mountain in that range. Captain Noel tried to approach Mount Everest in 1913 through Tashirak, but was unable to get any near view of the mountain, and was stopped by the Tibetan authorities from approaching any nearer.

Political obstacles have always stood in the way of any exploration. Mount Everest is situated on the borders of Tibet and Nepal, both of which countries are closed to Europeans. The Gurkhas have always objected to Europeans coming into their country, and public feeling there is still very strong on the subject. In Tibet, too, there has been a great prejudice against the foreigner, and we also had a self-denying ordinance

with Russia by which neither country would allow their subjects to enter Tibet. Last year, however, owing to the changed political conditions it became possible to approach the Tibetan Government with a request that permission be granted for an expedition to proceed to Mount Everest. Mr. Bell was at the time going to Lhasa on a special mission from the Government of India, and, thanks to his personal friendship with the Dalai Lama, he was able to obtain permission for the expedition to start, and the Dalai Lama, besides giving the expedition a passport, sent written instructions to all the governors of the districts through which we were to pass that they were to give us all facilities, and were to help us in every way, which orders were carried out to our entire satisfaction, in spite of the fact that this policy was the very opposite to their traditional policy of the total exclusion of foreigners from the country.

The object of this year's expedition was to make a thorough reconnaissance of Mount Everest and of the approaches to it from the north, east, and west, and to find out whether a possible route existed that would lead to the summit, and that was not physically impossible. For the purely mountaineering part of the work we had Mr. H. Raeburn, the leader of the mountaineering party, Dr. Kellas, Messrs. Mallory and Bullock, all members of the Alpine Club. In addition to this object there was the very important work of surveying and mapping the unknown territory through which we were travelling and the very difficult mountainous regions that surrounded Mount Everest. For this purpose the Government of India had kindly lent the expedition two officers of the Survey of India, Major H. T. Morshead, D.S.O., and Major Wheeler, M.C., R.E. Major Morshead had already had a considerable experience of travelling in Tibet, having completed valuable travels and survey work in the Kham and eastern districts. Under him were three native surveyors, one of whom was left in Sikkim to revise the existing and out-of-date maps of that country; the other two, Lalbir Singh and Gujar Singh, accompanied us. Major Wheeler, the other surveyor, was an expert in the Canadian system of photo-survey, a method especially useful in difficult and mountainous country. The Indian Government had also lent the expedition the services of Dr. A. M. Heron, of the Geological Survey of India, to study the geology of the region, about which nothing was known. Mr. A. F. R. Wollaston, also a member of the Alpine Club, and well known for his journeys in Africa and New Guinea, accompanied the expedition in the capacity of doctor, naturalist; and botanist, and had brought out with him a complete collector's outfit.

At the beginning of the year, as soon as permission for the expedition had been granted, preparations were immediately begun to collect stores and to arrange for the Alpine and scientific equipment that was to accompany the expedition. Most of the stores were bought in England, and

all the Alpine equipment, including skis and snow-shoes, rope, crampons, and Alpine tents; the ordinary tents and a certain amount of food stores were bought in India. The scientific equipment included maximum and minimum thermometers, black- and bright-bulb solar radiation thermometers, hypsometers, George barometer, and aneroids in pairs to read from 15,000 to 22,000 and from 22,000 to 30,000 feet. The photographic equipment consisted of three stand cameras, one $7\frac{1}{2} \times 5$ and two quarter-plate, all fitted with telephoto attachments. There was also a Panoramic Kodak and several small Kodaks for use at great heights, where it would be impossible to carry up the larger cameras. The Imperial Plate Company kindly presented all the dry-plates for the expedition. The members of the expedition left England at different times, arranging to meet at Darjeeling by the middle of May, when it was hoped that the expedition would be able to start. Mr. Raeburn was the first to arrive there, as he had gone ahead to collect coolies for the expedition. For high climbing a special type of coolie is needed, one who is strong and hardy and does not mind the cold and is also accustomed to live at great heights. The type of man who best fulfils these conditions is the Sherpa Bhotia, who comes from the north-east of Nepal from the districts that lie to the south of Mount Everest. He is a Buddhist by religion, and though at times quarrelsome and rather too fond of strong drink, yet he proved a very useful and capable type of man, who could be rapidly trained in snow and ice craft, and who was not afraid of the snow or the cold. We also picked up a few Tibetans from the Chumbi Valley on the way, and these proved to be as good as the best of the Sherpas; they were less trouble to manage, and could equally well carry loads at great heights. These coolies were all fitted with boots, and very difficult some of them were to fit with their broad feet—as broad as they were long. Blankets, cap comforters, fur gloves, socks, and warm clothing were issued to all of them, and for those that had to sleep at the highest camps, eiderdown sleeping-bags were taken. The expedition also took two interpreters with them, Gyalzen Kazi, a Kazi of Sikkim, who came from near Gangtok, and Chheten Wangdi, a Tibetan who had at one time been a captain in the Tibetan Army, and then had been with the Indian Army in Egypt during the War. They proved quite invaluable to the expedition. They were both of them very hard-working, and saved the expedition many thousands of rupees in expense; their tact and knowledge of Tibetan ways and customs were of the greatest use in keeping up the friendly relations established between the expedition and the Tibetans.

Lord Ronaldshay, the Governor of Bengal, showed the expedition every kindness and hospitality, and went out of his way to help it in every way possible at Darjeeling. The stores from England, which had gone round by sea, were unfortunately late in arriving, owing to

congestion in the harbour at Calcutta, and insufficient dock accommodation there. However, once they were landed, every one was most helpful, and the Darjeeling Himalayan Railway, which had given a free pass for them over their line, had everything brought up to Darjeeling by May 16.

Arrangements had been made with *The Times* and with certain Indian newspapers to publish periodical telegrams dealing with the progress of the expedition, and though this news was available to all other Indian papers, they took no advantage of it, and preferred to boycott the expedition.

Before going up to Darjeeling I had been to Simla, where I had had an interview with Lord Reading, the Viceroy, who had shown great interest in the expedition and had given a subscription of Rs.750 towards it. The Commander-in-Chief, Lord Rawlinson, I had also seen, and he had arranged to lend the expedition 100 Government mules. These arrived at Darjeeling early in May and were to be our main transport. The mules were a fine lot, sleek and fat, and we had great hopes of them. On May 18 and 19 the expedition left Darjeeling in two parties, with fifty mules and twenty coolies in each party. Major Morshead had left on May 13, travelling up the Teesta Valley, with his surveyors, and was to meet us at Kampa Dzong. We were unable to take all our stores at once, and left part of them behind, intending to make use of the Government mules in bringing them on later. Throughout the journey across Sikkim the weather was very wet, with heavy rain each day; the mountain tops and ridges were all covered with clouds and prevented our obtaining any views. Owing to its heavy rainfall Sikkim is a country with a lavish growth and a marvellous vegetation; the path that leads across to the Tibetan frontier is a very trying one, as it is a series of steep climbs followed by equally steep descents into steaming tropical valleys. Wonderful butterflies of every shade and hue flitted across the path, scarlet clerodendrons made brilliant patches of colour in the dark green of the luxuriant forest among huge tree ferns. Creepers and ferns hung from every tree; white, orange, mauve, or purple orchids grew among the mosses and ferns on the branches of the trees, and showed up in lovely clumps of colour. We passed big hedges of daturas on the way, 15 to 20 feet in height and covered with hundreds of great white trumpet-shaped blooms, quite 8 inches in diameter and fully a foot in length. At night they gave out a strangely sweet scent and seemed to gleam in the darkness with a curious kind of phosphorescence.

Ever since leaving Darjeeling our mules had been giving trouble, and two or three from each party had to be left behind after each march. After travelling for four days we stopped at Rongli, hoping they might recover after a day's rest. Ten mules had already been left behind and one had died. The next march to Sedonchen was a short one of only 9 miles, but

the path climbed from 2700 feet to 7000 feet, and this completely finished the mules. For one party alone we had already hired twenty-two ponies to take some of the loads, and after Sedonchen we should have had to hire ponies to carry their own line-gear as well as all our loads, so that there was now nothing to be done except to send the mules back and rely on what local transport we could get. The marches ahead of us were longer and the climbing steeper than anything we had yet done. We were, however, on the main trade route to Tibet, and had passed hundreds of Tibetan mules coming down from Tibet laden with bales of wool and others returning with rice, grain, and cloth bought in exchange. We were, therefore, able to pick up sufficient mules to carry us to Yatung; if we had taken the shorter route up the Teesta valley this would have been impossible, as villages there are small and there is practically no transport passing along that route.

The path is really only a steep stone causeway up the mountain side, a regular *via dolorosa* and most unpleasant to walk upon; but probably anything else would be washed away by the torrential rain that falls here during most of the year. Leeches abounded here, sitting up at the end of every leaf and fern and waving at the passers-by. From Sedonchen to Gnatong the path climbs 5000 feet in the first 5 miles, and as we rose higher we entered into the rhododendron forests after passing through the zone of oaks and magnolias. The rhododendrons at this time of the year were a glorious sight. No photograph could do justice to the scene—it needed a painter at least. The hillside was a blaze of colour—rhododendrons, orange, red, deep crimson, pink, white, cream-coloured, formed a glorious mixture of colours. Every yard of the path was a pure delight. Now appeared grassy fields carpeted with primulas and many others of the purely Alpine plants. Gnatong was a very wet and cold spot with a rainfall of 180 inches, and on the next day we crossed the Jelep La, 14,390 feet, in pouring rain. This was the frontier between Sikkim and Tibet, and on going a few hundred feet down on the Tibetan side we emerged into fine weather with blue skies, having left the rain behind us on the Sikkim side. Everywhere were primulas and rhododendrons, the former appearing the moment the winter snow had melted from the ground. It was a steep and a stony descent of over 5000 feet into the Chumbi Valley, but the rhododendrons in the great forest of fir trees showed up splendidly, the big pink blooms of *Aucklandi*, the orange bells of *cinna-barinum*, and many a white and yellow one too, in striking contrast to the dark green of the firs. We now met birch, sycamore, and willows, all pale green, with the tender green of early spring, white spiræas and clematis, yellow berberis, white and pink roses, purple iris, and a mass of other wild flowers. The Chumbi Valley is one of the most fertile and prosperous valleys in all Tibet; the houses are large and well built,

reminding one very much of Tirolese villages. The rainfall here is but a quarter of that which falls on the other side of the Jelap La; potatoes, barley, wheat, apples and pears all grow well here. The air everywhere at this time of the year was scented by the wild roses. From Yatung to Phari was 28 miles, two days' easy march up the Chumbi Valley. We visited the Galinka and Donka monasteries on the way, both containing enormous prayer-wheels in which they said there were over one million prayers. Each time the wheel is turned a bell rings, and one million prayers have ascended to heaven. In other places we met prayer-wheels turned by water brought down in irrigation channels, and again in other parts the wind was used to do the same work, a kind of anemometer being fitted up to catch the wind. This latter was, perhaps, the most constant, as the wind blows both summer and winter in Tibet, whereas for six months in the year the water is frozen, and the water-wheel is silent and can offer up no prayers. In the Donka monastery was a famous oracle, a regular Delphic oracle who was consulted far and wide, and his oracles had a great reputation for truth. Here we were given the usual Tibetan tea, poured out into agate and silver teacups and made with salt, tea, and butter, all churned up together. On a cold day this was a warming drink, but I never much took to it as a beverage, though I had to take many cups of it during the next few months and had to pretend to enjoy it.

Phari is a very dirty village, with a stone fort, and is situated at a height of 14,300 feet. It is always a cold windy spot, but it is an important trade mart, both to India and across the Tremo La to Bhutan. It lies at the foot of the sacred peak of Chomolhari—a very beautiful mountain, just under 24,000 feet, which stands at the entrance to the real Tibet, where the great plains and rolling downs begin with their far distant views. We left Phari on May 31 with a most marvellous collection of transport animals, comprising donkeys, bullocks, mules, ponies, and yaks. There is a short way from Phari to Kampa Dzong which takes only three days, but we were told that it was too early in the season to use that road, and that we would have to take the long way round. We afterwards found out that this was a lie, and that they had sent us the long way round in order to be able to charge us more. We had not yet got accustomed to Tibetan ways.

From Phari to Kampa Dzong by the long route took us six days. For the first two days we followed the ordinary trade route to Gyantse, over the Tang La, 15,200 feet, through Tuna to Dochen, keeping at a height of 14,800 all the way. Chomolhari was a magnificent sight the whole time, with its 7000 feet of precipices descending right on to the Tuna plain. Near Dochen was the large shallow lake of Bam-tso, a lake with the most lovely colours, the shades varying from deep blue through purple to a light blue-green. In other parts of it the waters were quite red from a weed

that grew in it, and in the still morning light the whole of the range of glacier-covered mountains that formed the background to the picture were reflected in its calm waters and formed a charming picture. Many bar-headed geese were seen swimming about, also some Brahmany duck and a few terns. On the plains roamed herds of Kiang, the wild horse of Tibet, and many Goa, the Tibetan gazelle, were feeding there, but the latter were very wary and would not allow us to get within 500 yards of them. It was at Dochen that our cook tried to boil a tin of fish without opening it first, and when he tried to open it afterwards when it was hot, to his surprise and fright, it exploded like a bomb in his face, and he and all his assistants in the kitchen were covered with small pieces of fish.

From Dochen we crossed the Dug Pass, 16,400 feet, to Khe, which was the site of the once-important town of Khe-tam. In those days the Kala-tso must have extended right up to it, but everywhere were traces of rapid desiccation. Ruins extended for more than a mile in every direction, and some of the buildings must have been of considerable size, but now there is no water in the valley, and all we could get that night came from a very dirty and muddy pond that was nearly dried up. From here we marched to Kheru, and camped at 15,700 feet with some nomads who were very friendly. The days were very warm, but at nights there were still sharp frosts. From Kheru there was a longer march of 16 miles to Tat-sang, crossing two small passes of 16,450 and 17,100 feet. Tat-sang lies at a height of 16,000 feet on the edge of a broad plain, where there were some excellent springs full of fish, and below a small nunnery, which stands on a commanding rock. That night, again, there was a sharp frost. The next day's march to Kampa Dzong led for 12 miles along a barren and dry valley to a pass 17,300 feet, and then gradually descended through a curious limestone gorge to Kampa Dzong, whose walls suddenly appeared towering above us on the cliffs. We passed many iris, light and dark blue, growing in the valley, and a curious pink trumpet-shaped flower that came straight out of the sand. Game was plentiful along the route, and I shot a gazelle and an *Ovis Ammon* (*Hodgsoni*) on the way. Here we met Morshead and his surveyors, who had come up the Teesta Valley and over the Serpo La.

Several of us, ever since leaving Phari, had not been feeling well, and had had stomach troubles owing to the change of climate and bad cooking on the part of our cooks. It took most of us some time to get acclimatized to the changed conditions. Dr. Kellas, however, instead of getting better, gradually grew worse and weaker every day, until on the last march before reaching Kampa Dzong, while being carried in a litter over a 17,000-foot pass, his heart failed him, and he passed quietly away. The following day we buried him at Kampa Dzong, within sight of the three great mountains he had climbed in Sikkim—Pawhunri, Kinchen-

jhow, and Chomiomo, and in view of Mount Everest, which he had so longed to approach. Mr. Raeburn, too, had been gradually getting worse, and there was no other alternative but to send him down with Mr. Wollaston to Lachen and put him under the care of the missionaries there until he could recover. This was a very serious blow to the expedition, the loss of two of the members of the climbing party.

After Kampa Dzong our route lay across broad plains and along the flat and swampy valley of the Yaru with the snowy chain of the Himalayas to the south of us; from these heights, for we were about 15,000 feet, they did not appear nearly as imposing as they do from the south, and for the most part the northern slopes were not as steep as those on the south. Game was plentiful all the way to Tinki Dzong, and we passed many ponds covered with teal, duck, and bar-headed geese. In these flat valleys the midges were very troublesome all day, surrounding us in clouds. Tinki Dzong was a picturesque old fort, situated on the banks of a large pond that swarmed with bar-headed geese, Brahmany duck, and teal. They were wonderfully tame and came waddling round our tents, knowing no fear of man, for they had never been shot or killed here. For some years a Lama, who had been sent from Lhasa, had lived here and made it his special object to tame all the wild animals around. The Jongpen rode out to meet us and escorted us to tents which had been pitched for us, where he had ceremonial tea, sweetmeats, and chang—Tibetan beer—all ready for us. The Jongpen was very Mongolian in appearance, and was dressed in fine embroidered Chinese silks, and proved a most obliging and courteous host, presenting us with a couple of hundred eggs and four sheep. There were several large monasteries and prosperous-looking villages tucked away all around in the recesses of the hills. The barley here was just beginning to come up, for in Tibet it can be grown and ripened at heights of over 15,000 feet, and during the summer months I saw some of the finest crops that I have seen anywhere. It is nearly all irrigated, as they do not seem to put much faith in the rain.

On June 11 we left Tinki, and had the usual trouble in starting. Some forty-five families were supplying us with transport, and as each wanted the lightest loads for their animals, there was a babel of noise and nothing was done. The headman eventually settled the squabbling by taking a garter from each family, and after mixing them up, laid one on each load, and whoever was the owner of the garter had to take the load. Crossing the Tinki Pass we descended again into the Yaru Valley at Chusher Nango, passing on the way a curious dwarf gorse which carpeted the valley with yellow. Our yaks here proved very wild, and the plain was soon strewn with loads flung off by them as they careered away, tail in air, in every direction. We forded the Yaru here by a ford 3 feet deep

and some 80 yards wide, and soon afterwards came to the fine country house of Gyanga Nangpa, which was the home of the Phari Jongpen. He rode out to meet us, and provided us with a very solid meal of soup and Tibetan dumplings with a chillie sauce. As we were given fifteen dumplings apiece we found some difficulty in making room for these. Europeans had never been seen before in any of these parts since leaving Kampa Dzong, so everywhere we were objects of the greatest interest to all the inhabitants who flocked out to see us.

Our next march proved a more exciting one, as after fording the Yaru again we had to cross a wide sandy plain full of shifting quicksands. When we arrived there a violent sandstorm was blowing, which our guides said would make the crossing easier. So off we started, dressed as though for a gas attack, with goggles over the eyes and with mouth and nose covered with handkerchiefs and mufflers. The sand was blowing in great clouds from off the sand-dunes, through which we wound our way, and under one we found some of our coolies halted and quite lost. After leaving the sand-dunes we had some wide stretches of wet sand to cross, over which the dry sand was blowing in smoke-like wisps, so that the whole ground appeared to be moving. In places where the wet sand shook and quivered we hurried on as fast as possible, and eventually we got everything over in safety. It was too late now to go on, so we camped in a howling gale among the sand-dunes, and it was many days afterwards before we got rid of the sand which had penetrated everywhere.

Close to this camp the Bong Chu and Yaru rivers meet and flow south, cutting their way through the great Himalayan mountain range. Much to our surprise, there suddenly appeared just before sunset, and far away down the valley over the clouds, a lofty and very beautiful peak. This we eventually decided must be Mount Everest, and the next morning we were able to prove this was so by climbing one of the hills to the west of the camp, from which we could see the whole range of the Himalaya to the south of us. Our drivers called this peak Chomo-uri, the Goddess of the Turquoise Peak, but this can only be a very local name, as Everest is known and called by the Tibetans Chomo-lungma, Goddess Mother of the country. This is the official name in Lhasa, and this name was known throughout the country, so that this is apparently the correct Tibetan name for Mount Everest. From this point we now entered the valley of the Bhong Chu, and this we followed up to Tingri. Major Morshead and his surveyors were kept very busy all the time, mapping the country as they went along, for they were travelling now in unsurveyed country. From one peak to the north of the Bhong Chu we had a very extensive view, stretching from the snowy ranges beyond Chomolhari and 120 miles to the east of us to Kanchenjunga, and then on to Makalu and Everest, and from there passing on to the high snow peaks west of Everest and to Gosainthan,

a range of some 250 miles of snow peaks; but above them all towered Mount Everest, several thousand feet above its neighbours.

Three days' march brought us to Shekar Dzong, where was the headquarters of the district with two Jongpens. There was also a large monastery here containing 400 monks. Shekar was a most remarkable place, on a rocky hill like a gigantic St. Michael's Mount. The town is at the base of the hill, but the monastery, consisting of innumerable buildings with narrow streets, was literally perched on stone terraces built out from the rocky sides of the hill and connected by walls and towers with the fort, which was built still higher up, and this again was connected by turreted walls with a Gothic-like structure at the summit, where incense was freely burnt every morning. Immense crowds came to see us and were most embarrassing in their attentions. While we were here we visited the monastery, which was a very rich one. In the largest temple, which, like all Buddhist structures, was very dark, were several life-sized gilded statues of Buddha, covered with precious stones and turquoises, and behind these was a colossal statue of Buddha fully 50 feet high. Round the temple were eight curious figures, about 10 feet in height, and dressed in quaint flounce dresses, which were the guardians of the shrine. From the entrance to the temple we climbed up a steep staircase, almost in complete darkness, until we came out on a platform almost opposite the gilded face of the great Buddha. Here were offerings of grain and butter and some exquisitely carved bowls and teapots of silver. The abbot of this monastery was the reincarnation of a former abbot, and was looked upon as an extremely holy man. He had spent sixty-six years of his life in this monastery, and all the monks seemed to adore him for his gentle and charming personality. His attendants with much difficulty persuaded him to be photographed, as they wanted to have some picture of him, for they said that his time on earth could now only be short. They dressed him up in some beautiful gold brocades, and priceless silk hangings were put up for a background. This photograph proved afterwards most useful, and people hundreds of miles away used to beg for a print of it, as they put it in their shrines and worshipped it and burnt incense before it, and I could not give any one a more welcome present than the picture of the old abbot of Shekar-chöde.

Two days' march from here brought us to Tingri, which was a large village and trading centre, situated on a small hill in the middle of the great Tingri plain. This was to be our first base while reconnoitring the north-western approaches to Mount Everest. We could get no information about the country to the south of us, so that it was necessary to send out parties in different directions. Information on any subject was always hard to get in Tibet. Most of the people knew nothing beyond their own village, and of those that had travelled further no two would tell you the

same story. It was the same with distances; they would have no real measure of distance or time. It would be a long day's journey or a short one, and for short distances it was expressed by cups of tea, which means the time that it would take to drink one, two, or three cups of tea. The representative of the Depon received us at Tingri, and put at our disposal the old Chinese Rest House, where we made ourselves quite comfortable. We had rooms in which to put away our stores, and another room we turned into a dark room to develop all the photographs that we were taking. It had taken the expedition just one month to get to Tingri from Darjeeling.

No time was lost, as it was not known when the monsoon might break, and how strong it might be in Tibet, and on June 23 Mallory and Bullock started off to find the easiest method of approaching Mount Everest from the north-west. Mount Everest was clearly visible from Tingri, about 40 miles away, and across a low range of hills and to the west of it were some fine snow peaks 25-27,000 feet in height, which dropped down to the Khombu Pass. It was just possible that a glacier might come from Mount Everest and join the Kyetrak River, so the following day Major Wheeler and Dr. Heron started off to go towards the Khombu Pass. From now on Dr. Heron was on the move all the summer, sometimes with one party, sometimes with another, and often by himself studying the geology of all the valleys and mountains. He travelled over more country than any other member of the expedition. Major Wheeler, too, began his photographic survey from the Khombu Pass, and most of the summer he spent by himself in lonely camps 18-20,000 feet high. The weather was very provoking, and often he would spend day after day, over 20,000 feet, on the top of a mountain in bitter cold and driving snow, waiting for the clouds to lift, to enable him to take his photographs. I think that he had the hardest and most trying time of all of us, and deserves the greatest credit for his work.

On June 22 Mr. Wollaston rejoined the expedition, after having taken Mr. Raeburn down to Lachen and handed him over to the care of the lady missionaries there. After his arrival I was now able to go away for a few days, and see personally where the various parties were and the general lie of the land, and I also wanted to find a place for our second base when we were reconnoitring the other side of Mount Everest. I first went and joined Major Wheeler and Dr. Heron at Kyetrak, and climbed up to the Khombu Pass—a fine glacier-covered pass 19,000 feet—leading into Nepal and across which a certain amount of traffic comes. It is always a dangerous pass, but early in the season they appear to take yaks over it. To the east towered up the great cliffs of the 26,800-foot peak, and to the right were the icefalls of Chorabsang. From here, with Dr. Heron, we crossed over the Pusi La or Marmot Pass (17,700 feet), a

quite easy pass into the Rongshahr Valley and down to its interesting gneiss gorges. The Tibetan frontier in many places extends for several days' march south of the main watershed of the Himalayas, as it is easier to get from Tibet over the passes into the upper reaches of the valley than it is from Nepal. At a certain distance down the valleys they narrow into steep precipitous gorges up or down which the going is very difficult and often impassable in the rainy season, as the rivers are quite unfordable. This is the case with the Nyanam Valley, the Rongshahr Valley and the Arun Valley. On the south side of the passes there is a considerable rainfall and the vegetation becomes quite luxuriant. Near Tazang the white roses covered the hillsides, while spiræas, small yellow and white rhododendrons, yellow primulas, wild gooseberries and currants grew everywhere, and the shady side of the hills were covered with forests of birch, while juniper covered the other slopes that faced south.

Owing to the amount of juniper which grows in it, and which is very aromatic and used as incense, the valley is looked upon as a sacred one, and there were several hermits that lived here in caves among the rocks. The nearest village supplied them with food, and morning and evening clouds of incense used to ascend from the mouths of their caves. After ten years of meditation the anchorite is supposed to acquire great holiness and to be able to support life on ten grains of barley a day. There was a female anchorite here, they told us, who had lived to 138 years, and was greatly revered. She forbade any killing of animals, and hence we found the wild sheep everywhere very tame. After returning to Keprak we travelled east to Zambu, a prosperous-looking village, owning some 3000 yaks, and with fine views looking up the Rongbuk Valley to Mount Everest, which was now only about 20 miles away. This valley led apparently right up to the foot of the giant precipices that come down from its north-western face. A large and unfordable glacier stream came down this valley, but at the monastery of Chöbu, 3 miles from Zambu, there was a foot bridge across which the loads were carried by hand, while the yaks were swum across the river. Some of the yaks preferred to stop on an island in the middle of the stream. Throwing stones at them was no use as they refused to budge, but at length some one produced a sling, and the stones thrown by this method evidently stung the animals considerably more and produced the required effect. The Rongbuk Valley was wild and gloomy, with great cliffs coming down to the muddy glacier stream, but it was a strangely holy valley, too, for at a height of 16,500 feet there was a large monastery, and besides the inhabitants of the monastery they told us there were between three and four hundred hermits and nuns living in little solitary cells or caves. Here, far away from the outside world, under the shadow of the great precipices of Mount Everest, they could meditate in peace and in perfect seclusion. All the wild animals and birds in this

valley were wonderfully tame. With my own eyes I watched the wild sheep coming down in the early morning to the hermits' cells and being fed not 100 yards from our camp, and I walked up openly to within 20 yards of a herd of burhel and they showed no signs of fear or paid the slightest attention to me. The rock pigeon would come and feed out of our hands, and so it was with all the other wild birds.

We found the Alpine climbers in a camp further up the valley, on a sunny terrace about 18,000 feet, above the left bank of the Rongbuk Glacier, and commanding magnificent views of Mount Everest about 7 miles away at the head of the valley. From here for a month they were able to train their coolies in snow and ice work, and to explore the side glaciers and the great spurs that come out to the west and north-west and which appeared so very impossible. At first, and up to July 7, the weather remained pretty fine; but then the monsoon broke and rain and snow hindered the work of reconnaissance very much and made all high climbing impossible. From this point Dr. Heron and I retraced our steps to Chöbu, and then in three marches, crossing the Doya La on the way, we reached Kharta and the main Arun Valley, or Bhong Chu, as the Tibetans call it as long as it remains in Tibet. The people here were at first very frightened of us. Villages were quite deserted when we approached, but after a while they crept back one by one. The Alpine flowers on the Doya La were exceptionally beautiful. The lovely blue poppy abounded and grew in clusters everywhere; pink, yellow, and white saxifrages covered the rocks, and several varieties of gentian were just beginning to come out. The Doya La marks a distinct barrier, the country to the north being barren, while on the south the moister currents of air penetrate up the Arun Valley and its tributaries, giving it a distinctly damper climate. This was very noticeable in the vegetation as we descended—rhododendrons, willows, juniper, roses, clematis, currants, abounded, and the ground was in places carpeted with yellow and sweet-scented primulas.

After much trouble we at length found Kharta, for the old maps here were hopelessly wrong. It was really a large collection of villages, near where the Kharta River ran into the Arun. We rode up to see the Jongpen, who lives in the village of Kharta Shigar, some 3 miles up the Kharta Valley. He had a large Chinese tent pitched for us in his garden, which was well sheltered and shady with willow trees all round, and containing a large painted water prayer-wheel under a great poplar tree, turned by a gurgling little stream that ran through the garden. The Jongpen was quite a young man, though he had been there for some years, and was most friendly and hospitable. He insisted on giving us all our meals, but we were getting experienced now in the use of chop sticks, and the Tibetan cooking was often better than that done by our own servants. We were able to look round for a suitable place for

our second base camp, as it would be necessary to explore the upper Kharta Valley and another valley that they told us about, that lay to the south of it. We eventually selected a house that stood all by itself on an old river terrace, and was surrounded by a shady garden of poplars and willows. The rent we had to pay for the house and garden amounted to 3½*d.* a day; but living is cheap in Tibet, and you can get a house-servant there for 2*s.* 8*d.* a year!

The rains now broke in earnest, and we had a very wet journey back to Tingri, going to Lumeh, with its huge poplar, 40 feet in circumference, and crossing a dangerous ford over the Rongbuk river higher up at Tashi Dzong; but I got back in three days, riding 36 miles the last day in pouring rain. During my absence Major Morshead had been busy surveying the country to the north of Tingri, and on my return he and Mr. Wollaston started off on a journey of exploration to the south-west, having had an invitation from the Jongpens at Nyanam to visit them, and they were able to see the great peak of Gosainthan and Gaurisankar, which was for a long time confused with Mount Everest, though over 20 miles away from it and 5000 feet lower. It was a very striking and beautiful peak. They also visited Lapchi Kang, where the poet Mila Rapa had lived and which was a great place of pilgrimage. Its name was known far and wide, and some people even applied this name to Mount Everest. The weather, however, unfortunately spoilt their trip, as it rained nearly all the time. But Mr. Wollaston managed to collect many natural history specimens and a great variety of new flowers. At Tingri, too, during this time, we had heavy storms of rain and thunder every night, fresh snow coming down as low as 15,000 feet; but most of it melted again during the day. The plains around Tingri were rapidly becoming marshes and the rivers soon became unfordable. The storms always formed to the north of us along the Sipri limestone ridge and the watershed between the Brahmaputra and Bhong Chu, and then gradually worked down towards the south. Fine weather came to us from the south, and when the south wind blew the rain stopped. It was seldom that the monsoon clouds brought rain directly to us. Every evening at Tingri we had brilliant lightning and loud thunder to the north, and our house proved to be very leaky. The rain poured in through the mud roofs.

On July 24 we started moving all our stores from Tingri to Kharta, and our first march was to Nezogu, where there was a bridge over the Kyetrak River. A couple of inches of snow fell during the night, and many of us who did not put on snow goggles soon enough suffered much the next two days from snow blindness. Wheeler, who had finished his survey of the Keprak and Khombu valleys, accompanied me as far as Chöbu, where he started to go up the Rongbuk Valley. Here he re-

mained for a month, having a very trying time with constant bad weather. Mallory and Bullock, finding the bad weather too much for them, joined us and came along to Kharta, and their coolies were also in want of a rest. From Chöbu to Rebu was a pleasant march through a fertile valley full of fields of barley, peas, and yellow mustard, and the wild flowers were very beautiful along the irrigation channels—a black clematis, blue monkshood, and delphinium predominating. The next day we crossed the Doya La, and on the 28th reached Kharta, where we established our camp in the garden belonging to the house that we had hired, the house itself being used for all our stores and for a dark room. Here we were only at a height of 12,300 feet, and the valley was green with fields of peas and barley. Just below us flowed the Arun, now a majestic river over 100 yards wide, and a mile lower down it entered into its great gorges, where in the course of the next 20 miles it drops from 12,000 feet to 7500 feet, a fall of over 200 feet in the mile. Every day the monsoon clouds came up through the gorge in thin wisps, but melted away always at the same spot, and though it poured with rain a mile below us, yet every day with us the sun shone brightly and it was very rare for any rain to reach us. Twenty miles away to the north again were heavy clouds, and storms and rain fell there daily, so that we seemed to be in a dry zone between the two storms. The forests of fir and birch came up to the limit of the rainfall, and then ceased suddenly when the rain stopped a mile below us.

On August 2 Mallory and Bullock left Kharta to explore the eastern approach to Mount Everest. Neither the Jongpen nor any of the inhabitants could tell us where the Kharta river had its source, and whether it was possible to get to Mount Everest that way. They said, however, that in the next valley to the south it was possible to do so. I followed the Alpine climbers a couple of days later, as Mr. Wollaston and Major Morshead had returned from their trip to Lapchi Kang. After going for 7 miles up the Kharta Valley, which is very fertile, with every level space filled with barley-fields, and containing numerous villages and monasteries, we turned up a side valley and then crossed over a chain of mountains to the south by the Langma La, a pass 18,000 feet in height. This led us into the wonderful Kama Valley, a valley unexcelled in beauty anywhere in the Himalayas, with the most stupendous scenery—gigantic rocky cliffs towering up to heaven, and immense cliffs of ice torn and riven, breaking off and falling with a thunderous roar far down into the valley below; there were smiling pastures right up amongst the ice and snow, with fields carpeted with many varieties of gentian; rhododendrons, birch and fir trees surrounded some of the lower glaciers, and forests of some of the most magnificent fir trees grew in the lower parts of the valley, the whole forming a combination of beauty not often seen.

At the extreme end of the valley towered up Mount Everest with its great buttresses forming a huge semicircle, and like a great snake, the Kangshung glacier, with its bands of black moraine, crept up to the foot of the rock walls and cliffs that formed the eastern side of Mount Everest. It did not need a long survey of these faces to satisfy the Alpine climbers that there was no practicable route up this side, but there was still an untried approach up the Kharta Valley, and to this valley they now turned their attention. But before we deal with the first reconnaissance of the Kharta Valley I should like to discuss the Kama Valley more fully; it was so very beautiful that I paid three visits to it at different times. From the upper Kharta Valley at the end of September, I paid my third visit with Major Wheeler and Mr. Wollaston. We crossed over a high pass well over 20,000 feet, and descended into the head of the valley. The weather was fine, and we were able to get some good photographs of Everest and Makalu—the latter a mountain only a little over 1000 feet below Mount Everest—yet a far finer mountain to look at and far more imposing. I was able to climb up on to a ridge between the two peaks, whence I got some superb views of the incredibly narrow peaks of Makalu, with its cliffs and formidable precipices often too steep even to be lightly powdered with snow. To the south we looked down over range upon range of snow mountains in Nepal. In the Kama Valley, Makalu is the most astonishing spectacle—its terrifically steep precipices descend sheer for 11,000 feet into the valley, and huge buttresses of perpendicular black rock support it with jagged black spires and towers. The Tibetans do not know the name of Makalu, but call the mountain Chomo Lönzo. From the northern peak the Kangdoshung glacier pours straight across the valley, forcing the stream that rises on Mount Everest itself to go under the glacier, entering it in an enormous black cavern. Rhododendrons, willows, mountain ash, blue poppies and iris now abound, and a few miles lower down begin the birch trees and the juniper, which grow with the greatest luxuriance; and in the autumn I never anywhere saw such beautiful colouring as the scarlet of the mountain ash and berberis, the yellow and gold of the birch and willows, and the deep red of the wild roses.

Towards the end of August, while waiting for the weather to improve, Mr. Wollaston and I crossed over the Chog La and dropped down to Sakeding (the pleasant terrace), a small trade mart a little lower down in the Kama Valley, in order to pay a visit and investigate the lower parts of the valley. Here we entered at 12,000 feet into the zone of the real forests. Here were juniper trees of a size quite unknown, with stems 20 feet in circumference and rising for 50 and 60 feet without a branch. Then a little lower down we entered into the zone of the silver fir (*Abies webbiana*), where the trees grow 100 feet and more in height and with a girth of over



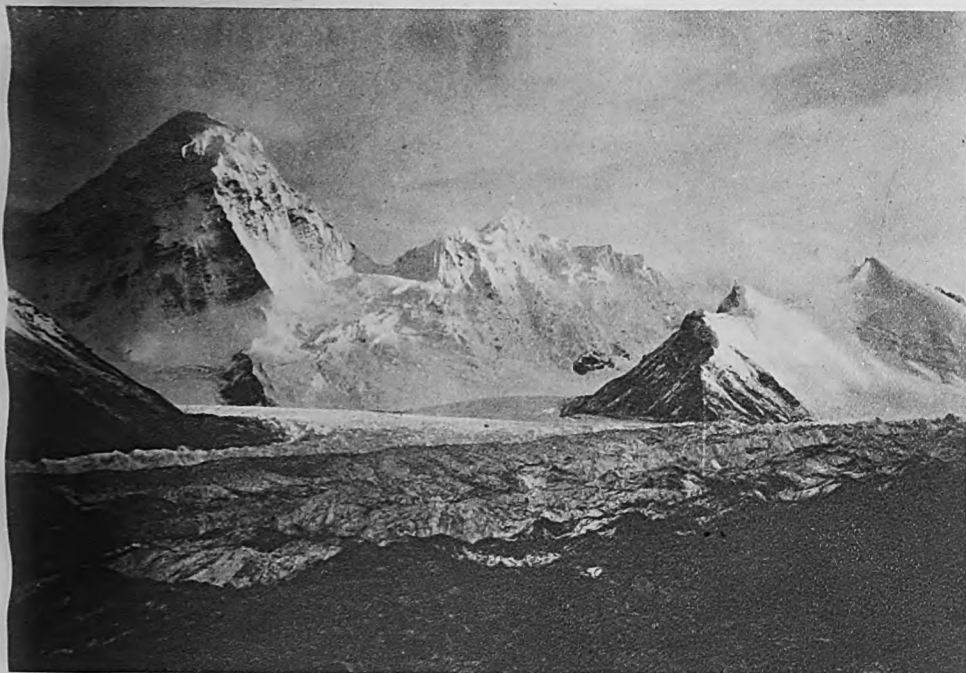
3. MOUNT EVEREST, NORTH-WEST RIDGE, WESTERN CWM ON EXTREME RIGHT AND LINGTREN PEAKS

Summit

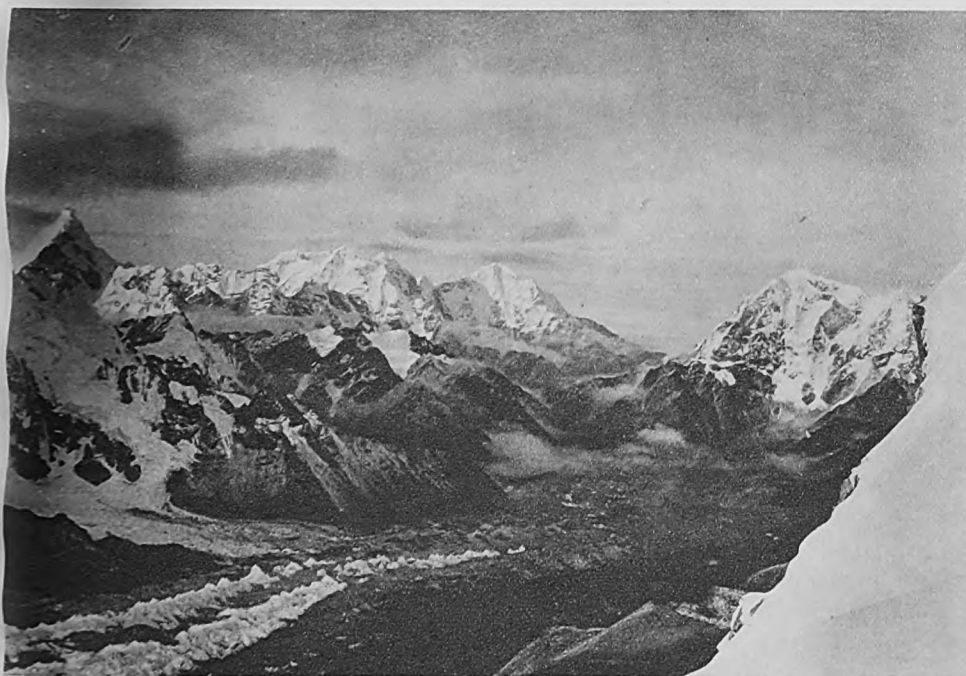
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4. MOUNT EVEREST AND END OF NORTH-WEST RIDGE WITH SNOW PASS LEADING TO WESTERN CWM



5. PUMORI AND LINGTREN-NUP, LOOKING SOUTH ACROSS WEST RONGBUK GLACIER

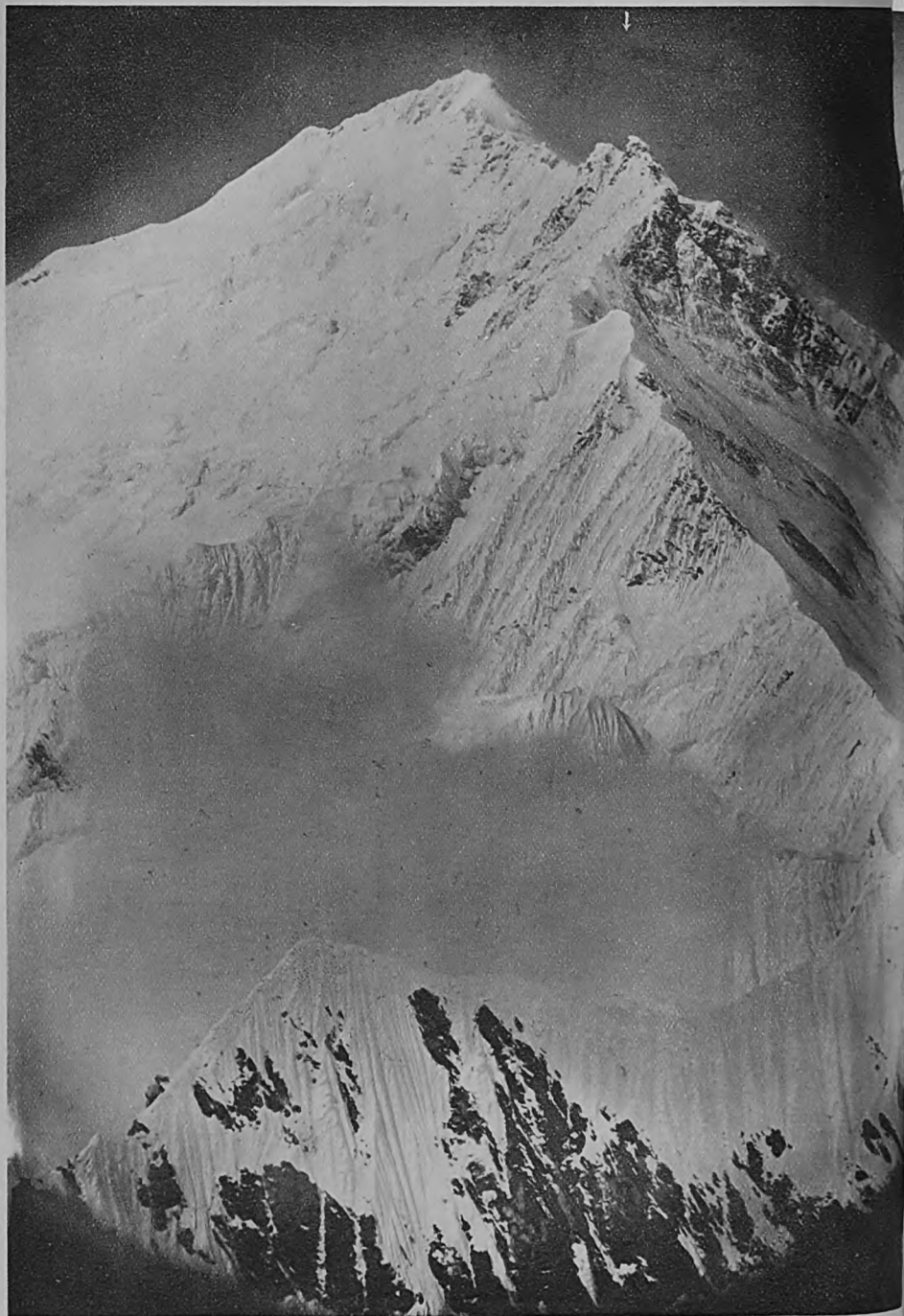


6. LOOKING SOUTH INTO NEPAL FROM THE SNOW PASS LEADING
TO THE WESTERN CWM GLACIER

Phot. by G. L. Mollory

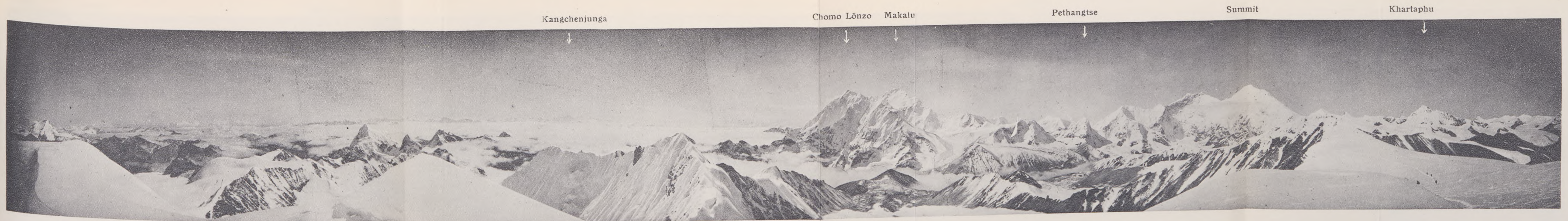
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N.E. Shoulder

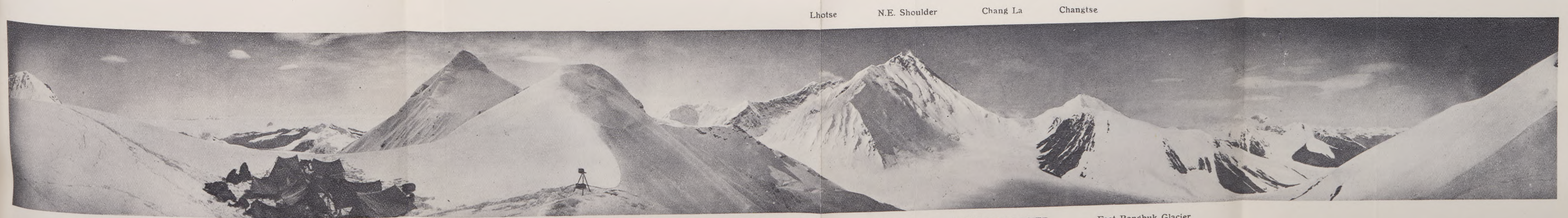


12. THE NORTH-EAST ARÊTE OF MOUNT EVEREST

Phot. by A. F. R. Wollaston

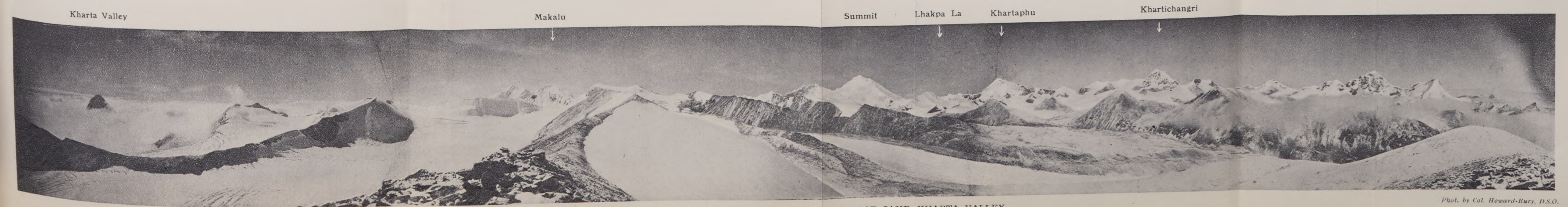


13. PANORAMA FROM KAMACHANGRI (21,300 FEET)



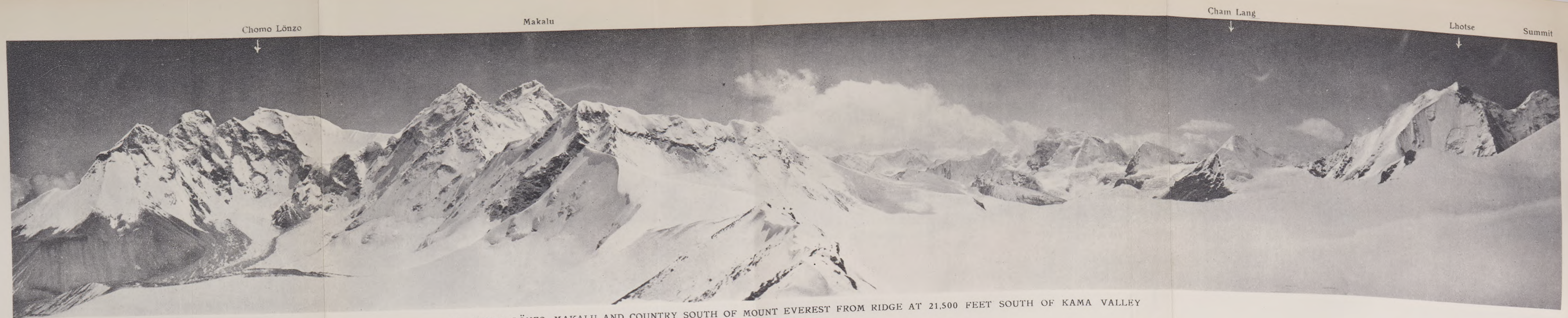
14. CAMP ON LHAKPA LA (22,500 FEET), CHANG LA, CHANGTSE, AND HEAD OF EAST RONGBUK GLACIER

East Rongbuk Glacier



15. PANORAMA FROM PEAK NORTH OF ADVANCED BASE CAMP, KHARTA VALLEY

Phot. by Col. Howard-Bury, D.S.O.



16. CHOMO LÖNZO, MAKALU AND COUNTRY SOUTH OF MOUNT EVEREST FROM RIDGE AT 21,500 FEET SOUTH OF KAMA VALLEY



17. PANORAMA OF THE KAMA VALLEY FROM SOUTH OF THE KANGSHUNG GLACIER

Phot. by Col. Howard-Bury, D.S.O.



18. LOOKING BACK FROM THE LAST CAMP TO THE LHAKPA LA

N.E. Shoulder

Summit



19. LOOKING OBLIQUELY UP THE NORTH FACE OF MOUNT EVEREST
FROM THE CHANG LA

Phot. by G. L. Mallory



21. DETAIL OF NORTH-EAST ARÊTE AND NORTH FACE FROM THE LHAKPA LA

25 feet, and a little lower down at 9-10,000 feet the lovely feathery *brunoniana* grew over 150 feet in height, and with trunks over 30 feet in girth. In these zones grew also the great rhododendrons, *argenteum* and *Falconeri*, for here was a climate of constant rain. These high mountains seemed to draw up the monsoon currents towards them, and every tree and bush was covered with long grey lichens that hung down and gently swayed in the wind; the hillsides were running with water and the path was a morass of black leafy mud, except where logs had been laid down on which to walk. Such conditions were favourable to leeches, and they abounded in this valley and to heights over 12,000 feet. They had evidently never tasted European blood, and were anxious to do so, thinking that we were a new-kind of food and a great delicacy, for they climbed up the tent walls, on our clothes and legs and faces; they got on to our plates and cups and into our food, and we never knew when we might not meet them. We travelled down to where the Kama River joins the Arun River, at a height of 7500 feet, below the first great gorges of the Arun and some 20 miles below Kharta. All this country is still in Tibet, as the Nepal frontier runs along the Everest-Makalu Ridge, and then continues eastwards, following the crest line of the ridge down to the spot where it joins the Arun. The ridge is crossed by one low pass of 14,000 feet, called the Popti La, and across this pass a certain amount of trade is carried on with Tibet by coolies during seven months of the year. For five months the pass is closed by snow, but chillies, dyes, and rice are sent over from Nepal and are exchanged at Sakeding for salt. It is all done by barter and no money changes hands.

Meanwhile Mr. Mallory and Mr. Bullock had been joined by Major Morshead, and had gone up to the headwaters of the Kharta Valley, and, after exploring it under bad conditions of weather and with very soft snow, had decided that there was a practicable means of getting on to Mount Everest by this route. The rainy season, however, was still in full swing; far more rain had fallen all through Tibet than we had ever expected to meet; the rivers everywhere were unfordable now, and all the bridges by which we had crossed in the spring had been washed away, so that there was nothing to do but wait until the weather improved. About the beginning of September the weather showed signs of improvement, and Mallory, Bullock, and Morshead moved up to the advanced base camp up the Kharta Valley, which was situated at a height of over 17,000 feet. Wollaston and I arrived there on September 6. Our tents were pitched in some little grassy hollows, which formed a perfect Alpine garden, as they were carpeted with gentians and saxifrages, and all around grew a host of other lovely little Alpine plants. Unfortunately the weather broke again, and until September 19 we had constant falls of snow every day. The time was spent in carrying up fuel and stores to the

20,000-foot camp, so that as soon as the weather improved we might start off at once.

There was a temporary break on the 17th, and with Mallory and Morshead we made one of the most delightful excursions that I have ever taken part in. We started off at 2 a.m. with a full moon shining with the most brilliant light, turning night into day, and we climbed up along the ridge south of the camp which led to a peak 21,300 feet high that overhung the Kama Valley. When we started there were 13 degrees of frost, and, except for the distant roar of the stream far away in the valley, there was no other sound, only an intense stillness. The valleys in Tibet, the great gorges of the Arun, the wooded valleys of Nepal, all lay buried under a white sea of clouds, out of which emerged the summits of the highest mountains, like islands out of a fairy sea. In the bright moonlight mountains like Kangchenjunga, 100 miles away, stood out sharp and distinct, and far away to the south, over the plains of India, was constant lightning. Here on this sharp ridge, at a height of 21,000 feet, with no obstruction to hide the view, sunrise came to us in all its grandeur and beauty. To the west, and close at hand, towered up Mount Everest, still over 8000 feet above us, at first cold and grey, like the dead, and with a sky of the deepest purple behind. Then, all of a sudden, a flash of golden light touched the utmost summit of Mount Everest and spread with a glow of gold all over the highest snows and ridges of this wonderful mountain, while behind the deep purple of the sky changed to orange. Makalu caught next the first rays of the sun and glowed as though alive, and then the white sea of cloud was struck by the rays of the sun and gleamed with colour; then slowly rose and struck against the island peaks in great billows of fleecy white. Such a scene it has seldom been the privilege of man to see, and once seen leaves a memory that the passing of time can never efface.

By September 20 we had all moved up to the 20,000-foot camp, situated on a sunny terrace of stones between two glaciers. Even here a few flowers existed, and every night any food in my tent left unprotected was eaten by some mountain rats, though what they can find ordinarily to eat at these heights I cannot imagine. The nights here were cold, but the days delightfully warm, and the black-bulb thermometer registered sun temperatures of 195° and 197° Fahr. regularly. The sun at these great heights is one of the great foes that we have to contend with. It seemed to exhaust and draw off all one's vitality and leave us limp, and good for no exertion. The whole climate is trying, and the extremes are so great that your feet can be suffering from frost-bite while you are getting sun-stroke at the same time. It is only the young and thoroughly fit person that can withstand the extraordinary changes of climate and temperature that there are in Tibet, and can acclimatize himself properly to the changed conditions of existence and food.

We had been saddled with a very useless and incompetent sirdar, who was in charge of the coolies; he was a thoroughly untrustworthy man, and was always making mischief; we had sent him away to Kharta to get him out of the way, and once he was gone we never had any trouble with the coolies, who worked most willingly. On September 22 six of us moved up to the Lhakpa La, a col 22,320 feet in height, to which Mallory had been busy carrying up stores; from here the only possible way up to Mount Everest could be seen clearly. It necessitated first a descent of 1200 feet on to a branch of the Rongbuk Valley, and then a steep climb up to the north col, a col that joined Mount Everest with the north peak, a peak some 24,600 feet in height. Mr. Mallory with Mr. Bullock and Major Wheeler went on the next day and reached the col at a height of about 23,000 feet; but the fates were altogether against them, and though the weather remained bright and clear, a north-westerly gale had already set in which made life even at the Lhakpa La camp very unpleasant, and conditions became absolutely impossible for any higher climbing. The whole slopes of Mount Everest seemed to be smoking with the snow being blown about in suffocating whirls and clouds, and with the iciest wind that made breathing almost an impossibility. After the monsoon there seems to set in a strong north-westerly current of air, with the force of a gale at heights over 23,000 feet, and nearly every day afterwards, throughout all our journey back, and right to the end of October, we could see the snow being blown off in great clouds from every peak over 23,000 feet, by a gale from the north-west, which would seem to preclude any higher climbs after the monsoon has ended in this easterly portion of the Himalayas. Tracks of hares, foxes, and wolves were seen in the snow at great heights up to 21,000 feet, and the track of what was probably a large loping grey wolf, which had tracks very like that of a barefooted man, gave rise to the legend of the snow man, which was well known to our coolies. As in many other countries, they have in Tibet a bogey man with which to frighten their children when naughty, and this takes the form of a hairy man that lives in the snow; and when they want to escape from him they must run downhill, as long hair from his head falls over his eyes when he runs downhill, and he is then unable to see, and so they can escape from him. Many such stories they have, and these wolf tracks in the snow, which looked at first sight like human prints, were at once accepted by them as being the tracks of wild men.

Defeated by the continuous gale, Mallory, Bullock, and Morshead, with Raeburn, whom they had picked up at the 20,000-foot camp, returned straight to Kharta, while Wollaston, Wheeler, and I crossed over a pass opposite the 20,000-foot camp and went round to Kharta after spending a few days in the Kama Valley, where we were lucky in getting some good photographs. It was not until October 5 that we were able finally

to get away from Kharta. The autumn colours in the Kama Valley were magnificent, and near Kharta the willows and birches were all brown and gold. The crops of barley and peas had all been garnered, and the people of these villages were very satisfied, as they said that we had brought the rain with us, and that their crops were 50 per cent. better than they were in most years.

We chose another route for the journey back, following up the valley of the Arun or Bhong Chu, as it is called in Tibet. This route was impassable during the summer months, when the rivers were in flood, but now with the snow and ice no longer melting its width was reduced by half, and it was fully 10 feet lower, so that we could make use of the Heath Robinson bridge of twisted hide at Gadompa. Across these ropes each load and person were slowly pulled, and when the Tibetans wished to play a joke on any one they let him slide rapidly down to the centre of the rope, where it sagged just clear of the water; but as a large wave formed in the rapids they had only to pause for a moment to allow the unfortunate passenger, who was helplessly trussed up, to get a ducking in this ice-cold water. At Shilling, near the sand-dunes and the quicksands, we struck our old route and travelled back swiftly along it, as winter in these lofty regions was coming on apace, and between Kampa Dzong and Phari the thermometer fell to zero Fahrenheit, and we had a regular blizzard of snow. This time we came back by the shorter route, so that it only took the caravan three days to get from Kampa Dzong to Phari, but the marches were long, over 20 miles each day, and over 16,000 feet all the time. Darjeeling was reached on October 25, and the expedition of 1921 was over. The expedition had accomplished what it had set out to do. All the approaches to Mount Everest from the north, north-west, north-east, and east had been carefully reconnoitred, and a possible route to the top had been found up the north-east ridge, and it was only climatic conditions that prevented a much greater height being attained this year.

The scientific results have not yet been fully worked out, but in general outline some 13,000 square miles of new country have been surveyed and mapped, part of this by the method of photographic survey and on a large scale; a large number of birds and mammals of all sizes have been collected; the geology of the whole region has been carefully worked out by the indefatigable Dr. Heron, who is at present compiling a geological map of the district, and a series of photographs have been taken of a country quite unknown and containing some of the grandest scenery in the world.

Such, in brief, have been the results of the first year's expedition.

MOUNT EVEREST: THE RECONNAISSANCE.

BY GEORGE LEIGH MALLORY.

(Read with the preceding paper at the Joint Meeting of the R.G.S.
and A.C. on 20 December 1921.)

THE reconnaissance of Mount Everest is a long story, and I do not propose to tell it now. It was necessary for our purpose, firstly, to seek in an unexplored country the most convenient approaches to various parts; secondly, by regarding the mountain from many different points of view to come to a correct understanding of its shape, and distinguish the vulnerable parts of its armour; finally, to pit our skill against the mountain wherever an opportunity of ascent presented itself. In the first two objects our task was largely accomplished between June 23, when we set out from Tingri, and August 18, when we first reached the Lhakpa La and looked over into the snow basin, which is the head of the East Rongbuk glacier. The final phase of the reconnaissance occupied the first three weeks of September, and I call it the "Assault," because we intended to climb as far up the mountain as we were able.

We had discovered before the final phase that the summit of Mount Everest was formed by the convergence of three arêtes. The faces which lay between them were clearly seen to be impracticable. The south arête is blocked by the south peak, a formidable crest about 28,000 feet high. The other two arêtes, west-north-west and north-east, are so steep in their lower parts that access is impossible. The only possible line of ascent is to reach the upper part of the north-east arête from the north. Between Everest and the north peak is a high snow col (about 23,000 feet), and it looks possible to get up from here.

The line of approach chosen to this col had been determined by a variety of circumstances, more particularly by the abundance of fuel in the Kharta Valley which had suggested an advance from the eastern side; but this approach would involve the crossing of another snow col, the Lhakpa La (22,500 feet), which we had already reached. Once the snow was firm the way there would present no difficulties.

It had become evident during our reconnaissance in July and August that any serious climbing on the great mountain itself must wait on the weather—if only for the sufficient reason that the labour of carrying loads over unmelted snow would be an unendurable strain upon our coolies. Our plans were based upon the assumption that what the wise men prophesied about the weather would come true. We were promised a fine

September. Some time about the beginning of the month the monsoon would end, and then we should have clear days of glorious sunshine and warmth to melt the snow, and cold nights to freeze it; at worst the calm spell would only be broken by a short anger. And so it was arranged in hope, if not in confidence, to move up on the first signs of improvement. Already, before we came down to Kharta, our advanced base camp had been moved up. It was now situated at about 17,300 feet on a convenient grassy plateau and only a reasonable stage below our 20,000 feet camp, where some light tents and stores had also been left. At these two camps we had, in fact, left everything which we should not absolutely require at Kharta, so that few mountaineering stores would have to be carried up from the base when we came up again. Our first task would be to supply the advanced base with food and fuel, and a start had already been made by collecting here a pile of wood, nominally thirty loads. Transport in any case was not likely to be a difficulty in the early stages. Local coolies could easily be hired, and Colonel Howard-Bury was to follow us up after a short interval with all available strength to help in every possible way.

The first object which our plans must include was, of course, to reach the north col; by finding the way to this point we should establish a line of attack and complete a stage of our reconnaissance. Secondly, we must aim at reaching the north-east arête. In so far as it was an object of reconnaissance to determine whether it was possible to climb Mount Everest, our task could never be complete until we had actually climbed it; but short of that it was important to have a view of the final stage, and could we reach the great shoulder of the arête we should at least be in a better position to estimate what lay between there and the summit. Finally, we saw no reason to exclude the supreme object itself. It would involve no sacrifice of meaner ends; the best would not interfere with the good. For if it should turn out that the additional supplies required for a larger campaign were more than our coolies could carry, we could simply drop them and aim less high.

In organizing the assault we had to consider how our camp could be established firstly at Lhakpa La, or, perhaps, better beyond it at a lower elevation, secondly at the north col, and finally as high as possible, somewhere under the shoulder, one thought, at about 26,500 feet. From the camp on the north col we should have to carry up ten loads, each of 15 lbs., which would provide tents enough and sleeping-sacks and food for a maximum of four sahibs and four coolies. Sixteen coolies were allowed for this task; twelve would, therefore, have to return on the day of their ascent and sleep at the north col; on the assumption that they would require an escort of sahibs, who must also sleep at this camp, four small tents must remain there, making six in all to be carried up to this point.

The lower end of the ladder must be so constructed as to support the weight at the top. It was comparatively a simple matter to provide the earlier camps. The first above the advanced base could be supplied before we moved up to sleep there, the coolies returning on the same day whenever they carried up loads. And the same plan could be adopted for the second at Lhakpa La; only one journey there, I calculated, would be required before we started from the 20,000-foot camp, and we could then go straight ahead without delay. The crux would lie in the stage from Lhakpa La to the north col. At the most we should have twenty-three coolies, sixteen who had been all along with the climbing party, three whom Wheeler had partially trained, and four more Sherpas, the maximum number being determined by the supply of boots. But it would not be necessary to carry on all the loads from Lhakpa La; and return journeys could be made from the north col, both by those who were not to stay there and by the twelve already mentioned who might fetch supplies if necessary on the final day of the assault. This plan was never executed in its later stages, and we cannot know for certain whether it would have held good. But it may be conjectured in view of our experience that the weakest link would have broken; either an extra day would have been spent between Lhakpa La and the north col, or, if we reached the north col, according to our programme, with the minimum of supplies, the coolies would not have been brought to this point a second time, and the climbing party would have been cut off from its reserves. And, granted the most favourable conditions for the attempt, in asking the coolies to carry loads of 30 lbs. on two consecutive days at these high altitudes we were probably expecting too much of them. It must be concluded, if this opinion is correct, that we had not sufficient coolies for what we intended.

On the last day of August, Bullock and myself were established once again at our advanced base. The weather had not yet cleared, though it was showing some signs of change. But it had been necessary to move up for the coolies' sake. At Kharta they had little to amuse them, and no work to employ their time; they were badly in need of a routine, which was easily enough provided. Besides, I wanted to be ready, and it seemed not too soon to begin carrying loads up to the next camp. There was no occasion for hurry in the event. We were obliged to wait nearly three weeks, until September 19, before moving forward. The delay served no useful purpose. The work of supplying our present needs and providing for the future was sufficiently spread over the long tale of days, but interspersed with more rest and leisure than any one required. It was a blessing to be comparatively a large party. Howard-Bury and Wollaston and also Raeburn had come up on the 6th, Morshead and Wheeler on the 11th, and for two nights Heron was of our company.

We kept ourselves fit. But it amused nobody to watch the procession of clouds which precipitated sleet by day and snow by night, and our appetite for adventure could not be stimulated by the days of waiting in so dreary a scene.

When at last the weather cleared, it was evident that the fate of our enterprise would be decided by the sun's power to melt the snow. Before we left the advanced base I had good reason to expect that we should meet adverse conditions, and was so resolved at the same time that nothing was to be gained by waiting. The coolies were lightly laden up to the first advanced camp, and sufficiently unfatigued to proceed next day. On the 20th, therefore, leaving Bullock to accompany Wheeler, Morshead and I set forth to get fourteen loads up to Lhakpa La. We had one spare coolie who carried no load, and Sanglu, who was now our acting sirdar, four of us in all to break the trail for the loaded men. Snowshoes were not carried, because there were not enough to go round. Though our prospects of reaching a high point on Everest were already sufficiently dim, I intended to carry out the original plan until obliged by circumstances to modify it; it might prove necessary to spend an extra day in reaching the north col, and in that case we could perhaps afford to stop short of Lhakpa La and establish our camp below its final slopes. But if the strain on this first day was likely to be severe, I argued that the coolies could rest to-morrow, and that the second journey in frozen tracks would be easy enough. That on the col we should pass the night a few hundred feet higher (22,500 feet) was a relatively unimportant consideration. The great matter was to put heart into the coolies; it would be infinitely more encouraging to reach the crest with a sense of complete achievement, to see the clear prospect ahead, and to proceed downwards on the other side. Our start at an early hour on the 20th was sufficiently propitious. The night was exceedingly cold, and we walked on hard crisp snow up to the icefall. But the conditions here were no better than expected; higher they were worse than I had imagined possible. No firm steps could be stamped by the leaders to save the coolies behind, and each in turn had to contend with the shifting substance of fine powder. Three fell out in a state of exhaustion, and made their own way down. Two of the loads were bravely carried on until they had to be abandoned about 800 feet below the pass. The party straggled badly. But time was on our side, and gradually the eleven remaining loads arrived at their destination. The coolies had behaved in the gamest fashion, and no small share in the result was contributed by Morshead, who alternately plodded in front and kept together a party behind. Whatever measure of success we afterwards attained was secured on this day.

Now that we had obtained a clearer view of the north col it was possible to make more exact calculations, and it was evident we must

modify our plans. We had seen a wall of formidable dimensions, perhaps 1000 feet high; the surface was unpleasantly broken by insuperable bergschrunds, and the general angle was undoubtedly steep. The slopes of Everest to the south were out of the question, and if it were possible to avoid a direct assault by the north side the way here would be long, difficult, and exceedingly laborious. The wall itself offered the best chance, and I was in good hopes we could get up. But it would not be work for untrained men, and to have on the rope a number of laden coolies, more or less mountain-sick, conducted by so small a nucleus as three sahibs, who would also presumably be feeling the effects of altitude, was a proposition not to be contemplated for a moment. We must have as strong a party as possible, in the first place simply to reach the col and afterwards to bring up a camp, if we were able, as a separate operation. With this idea I selected the party. Wollaston could not be one of us as his place of duty was not with the van. Only Wheeler besides had sufficient mountaineering experience, and it was decided that he alone should accompany Bullock and myself on our first attempt to reach the col.

I had hoped we should have a full complement of coolies on the 22nd, but when morning came it was found that three, including two of the best men, were too ill to start, consequently some of the loads were rather heavier than I intended. But all arrived safely at Lakpa La before midday. Visited by malicious gusts from the north-west the pass was cheerless and chilly. However, the rim afforded us some protection, and we decided to pitch our tents there rather than descend on the other side with the whole party, a move which I felt might jeopardize the return. I was not very happy about the prospects for the morrow. For my own part I had been excessively and unaccountably tired in coming up to the col; I observed no great sparkle of energy or enthusiasm among my companions. Sanglu was practically *hors de combat*; some of the coolies had, with difficulty, been brought up to the col and were more or less exhausted, and many complaints of headache, even from the best of them, were a bad sign.

There was no question of bustling off before dawn on the 23rd, but we rose early enough, as I supposed, to push on to the north col if we were sufficiently strong. Morshead and I, in a Mummery tent, had slept well. I congratulated myself on an act of mutilation in cutting two large slits in its roof. The rest had not fared so well, but seemed fit enough, and the wonderful prospect from our camp at sunrise was a cheering sight. With the coolies, however, the case was different. Those who had been unwell overnight had not recovered, and it was evident that only a comparatively small number would be able to come on. Eventually I gathered ten—two men, who both protested they were ill, casting lots for the last place; and of these ten it was evident that none were unaffected by the height,

and several were more seriously mountain-sick.* Under these circumstances it was necessary to consider which loads should be carried on. Howard-Bury, Wollaston, and Morshead suggested that they should go back at once so as not to burden the party with the extra weight of their belongings, and it seemed the wisest plan that they should return. Certain stores were left behind at Lhakpa La as reserve supplies for the climbing party. I decided at an early hour that our best chance was to take an easy day, and, after a late start and a very slow march, we pitched our tents on the open snow up towards the col.

It might have been supposed that in so deep a combe and sheltered on three sides by steep mountain slopes we should find a tranquil air and the soothing though chilly calm of undisturbed frost. Night came clearly indeed, with no gentle attentions. Fierce squalls of wind visited our tents and shook and worried them with the disagreeable threat of tearing them away from their moorings, and then scurried off, leaving us in wonder at the change and asking what next to expect. It was a cold wind at an altitude of over 22,000 feet, and however little one may have suffered the atmosphere discouraged sleep. Again, I believe I was more fortunate than my companions, but Bullock and Wheeler fared badly. Lack of sleep, since it makes one sleepy, always discourages an early start, and hot drinks take time to brew. In any case, it was wise not to start too soon so as to have the benefit of warm sun whenever our feet should be obliged to linger in cold snow or ice steps. It was an hour or so after sunrise when we started, and half an hour later we were breaking the crust on the first slopes under the wall. We had taken three coolies who were sufficiently fit and competent, and now proceeded to use them for the hardest work. Apart from one brief spell of cutting, when we passed the corner of a bergschrund, it was a matter of straightforward plugging, firstly slanting up to the right on partially frozen avalanche snow, and then left in one long upward traverse to the summit. Only one passage, shortly below the col, caused either anxiety or trouble. Here the snow was lying at a very steep angle and was deep enough to be disagreeable. About 500 steps of very hard work covered all the worst of the traverse, and we were on the col shortly before 11.30 a.m. By this time two coolies were distinctly tired, though by no means incapable of coming on; the third was comparatively fresh. Wheeler thought he might be good for another 500 feet, but had lost all feeling in his feet. Bullock was obviously tired, but by sheer will power would evidently come on—how far one could not say. For my part, I had had the wonderful good fortune of sleeping tolerably well at both high camps, and now

* I use this expression to denote, not a state of intermittent vomiting, but simply one in which physical exertion exhausts the body abnormally, and causes a remarkable disinclination to further exertion.

finding my best form ; I supposed I might be capable of another 2000 feet, and there would be no time for more. But what lay ahead of us? My eyes had often strayed as we came up to the rounded edge above the col and the final rocks below the north-east arête. If ever one had doubted whether the arête were accessible, it was impossible to doubt any longer. On those easy rock and snow slopes was neither danger nor difficulty. But at the present time there was wind. Even where we stood under the lee of a little ice cliff, it came in fierce gusts at frequent intervals, blowing up the powdery snow in an evil manner sufficient to take one's breath away. On the col beyond it was blowing a gale. And higher was a more fearful sight. The powdery fresh snow on the great face of Everest was being swept along in unbroken spindrift, and the very ridge where our route lay was marked out to receive the full fury of this onslaught. We could see the blown snow deflected upwards for a moment where the wind met the ridge only to rush violently down in a veritable blizzard on the leeward side. To see, in fact, was enough ; the wind had settled the question ; it would have been folly to go on. Nevertheless, we struggled a few steps further to put the matter to the test. For a few moments we exposed ourselves on the col to feel the full blast, and then struggled back to shelter.

It remained to take the final decision on the morning of the 25th. We were evidently too weak a party to play a waiting game at this altitude. We must either take our camp to the col or go back. A serious objection to going forward lay in the shortage of coolies' rations. Had the men been fit, it would not have been too much for them to go back to Lhakpa La unladen and reach the north col the same day. I doubted whether any two could be found to do that now ; and to subtract two was to leave only eight, of whom two were unfit to go on, so that six would remain to carry seven loads. However, the distance to the col was so short that I was confident such difficulties could be overcome one way or another. A more unpleasant consideration was the thought of requiring a party which already felt the height too much to sleep at least 1000 feet higher. We might well find it more than we could do to get back over Lhakpa La and be forced to make a hungry descent down the Rongbuk Valley. But there would be no disaster in that event. The crucial matter was the condition of the climbers. It seemed we had not sufficient strength to allow a margin for the unforeseen. And what more were we likely to accomplish from a camp on the north col? The second night had been no less windy than the first. Ever since the weather had cleared the wind had been strong from north-west, and every day we had seen the powdery cloud blown from the mountain crests. The only signs of a change now pointed to no improvement, but rather a fall of snow, by no means an improbable event according to local lore. The arguments, in fact, were all on one

side; it would be bad heroics to take wrong risks; and fairly facing the situation one could only admit the necessity of retreat.

It may be added that the real weakness of the party became only too apparent in the course of our return journey over Lhakpa La on this final day; and it must be safe to say that none of the three climbers has ever felt a spasm of regret about the decision to go back or a moment's doubt as to its rightness. It was imposed upon us by circumstances without a reasonable alternative.

No considerations can be more important for future guidance than those affecting the health of the party. But here knowledge will not best be sought from one man's report, even the doctor's. If every member of the expedition were to write a full and frank report of his own health from first to last, with particular reference to the effects of elevation, we might begin to know something about it. I know chiefly in a negative way, and in any case not minutely, how I felt in differing circumstances at various elevations; I know just a little how Bullock was affected, and still less about the coolies. It may possibly be worth adding a few inferences to what has previously been recorded by other parties in the Himalayas.

It is unfortunate for the present purpose that I enjoyed an almost uniform good health at all elevations from first to last. So far as mere living at high altitudes is concerned I observed almost no effects in my own case. My appetite was never-failing. I ate large quantities of solid food, mutton, potatoes, quaker oats, bread, and biscuits—whatever presented itself—and it was often decidedly unattractive; and after a day's climbing I had the same craving for sweet things which I have often noticed in the Alps, where, at a place like Zermatt, the consumption of a great number of sweet cakes seems only to stimulate my energy. And I almost invariably slept well at almost all our camps, more lightly perhaps at the higher ones, but with sufficiently refreshing unconsciousness. Comfortable ground, sufficient warmth, a pillow rightly adjusted, all the conditions of a contented body, mattered far more to me than the quality of the air I breathed. On one occasion, after sleeping less well than usual at 17,000 feet, I went up to 20,000 feet and slept in divine oblivion, waking only to see the dawn with fresh delight. Not every one was quite so fortunate as myself. Bullock's appetite, though it improved later to admiration, was notably deficient during the first three weeks for one who was working his body so hard; and he was short of sleep at our highest camps. But in general he seemed hardly to suffer from the fact of living for a few days together at elevations above 17,000 and 18,000 feet. Some other members of the expedition seemed not to be quite at their best at 20,000 feet, and at Lhakpa La were imperfectly refreshed by the night's rest. As to the coolies, I fear their discomforts were apt to increase at

the higher camps more than ours, and consequently they may have suffered some loss of sleep, but I have not the slightest evidence to show that after spending a night or several nights at a high camp, except at the last two, they were in any way less fit to go on next day as a consequence of the altitude.* It should, perhaps, be added that it seemed in some physical way a relief to come down after staying a long time about 17,000 feet or higher; but on the two occasions when we rested for some days at about 12,000 feet (Kharta), it seemed to me that we were less rather than more fit when we went up again.

Another aspect of this inquiry is the effects of altitude over a longer period. What were the general effects upon health after two or three months? When the party gathered at Kharta, towards the end of August, I observed that most of us seemed remarkably fit; but not so Bullock; he was too thin and appeared to require rest. I dare say he took it with advantage. About myself it is worth remarking that I had completely recovered, with the aid of a tonic, from a nasty visitation of fever and sore throat *without coming down to lower altitudes*. The last few days of our reconnaissance were a strenuous time, but for the expedition, which, far more than any other, demanded endurance, when we first reached Lhakpa La, I was perfectly fit. Nevertheless, when we went up again on August 30 I was mountain-sick, and never afterwards in September regained my earlier strength. Nor I think did Bullock. It is difficult to account for this deterioration, unless we suppose that altitude, though it may have no immediate effect, takes its toll at length. Wheeler, whose experiences of high camps may be compared with ours, may not agree with this conclusion as fitting his own case; but then his case was different.

Exertion at great heights is another matter, and less dubious in its results. I suppose them to be sufficiently well known. I observed especially: (1) Rapid acclimatization much as in the Alps, but even more remarkable. (2) Very little relief in coming down; descent was very definitely an exertion, and fatigue continued to increase, especially on gentle slopes; it was necessary to breathe with conscious effort even when descending. (3) The difference between what we could do, say, at 18,000 feet and 20,000 feet was greater in the case of the coolies, whenever they carried loads, than in others. The coolies always appeared to feel the height more quickly. I put this down partly to the fact that few of them really learned either how to breathe or how to husband their strength. Certainly they were much better towards the end, walking rhythmically, but to the last the majority were inclined to hurry. In any case, a small load makes a big difference, but can be compensated

* Nevertheless, I think it a wise precaution to avoid much sleeping at camps as high as 20,000 feet.

largely by reducing pace. (4) Headache was at least as common after descent as before; but personally, so long as I was perfectly fit, and remembered to breathe properly, I did not suffer from headache. (5) A stomach disordered, even in the smallest degree, enormously decreased one's power of endurance. (6) In the last stages, whether as a result of higher altitudes or unfitness I cannot say, a prolonged exertion required more rest—two whole days. This applies to the coolies as well as to myself and others, too, I believe. (7) I was much surprised to find how easily steps might be cut at 21,000 feet. I found myself quite untired after an hour's work in hard ice. (8) We had little experience of rock climbing; but from such as we had (*e.g.* some steep pitches on one of the peaks which we climbed west of the Rongbuk), I am inclined to think that easy rocks, where one is constantly helping oneself up with arms as well as legs, offer the least tiring way of ascent; and that even comparatively difficult rocks might very well be climbed by fit men up to 23,000 feet.

Finally, it may perhaps be worthy of remark that on the very few occasions when my mind was exerted, I found mental exertion to be tiring at high altitudes and tending to sleeplessness. The life of the lotus-eater was best between expeditions—with perhaps a little piquet.

Is it humanly possible to reach the summit of Everest? We have not a single convincing argument to solve that problem. I felt somehow, when we reached the north col, that the task was not impossible; but that may only have been a delusion based on the appearance of the mountain from that point; it looks much smaller than it is. However, one factor, easily forgotten, is in favour of the assault. The higher one goes the less will be the effect of any given rise. To ascend the 3000 feet above 17,000 is notably less laborious than to ascend the next 3000 up to 23,000 feet; but the atmospheric pressure diminishes less rapidly as one goes up; consequently the difference in effort required between one stage and another should be less at each succeeding stage, and least of all between the last stage and the last but one. I believe it to be possible, at all events, for unladen mountaineers to reach 26,000 feet, and if they can go up so far without exhaustion, I fancy the last 3000 feet will not prove so very much more tiring as to exclude the possibility of their reaching the summit.

But in asserting this bare possibility, which, besides, leaves the coolies out of account, I am very far from a sanguine estimate as to the prospects of success. Before we parted, I put this question to Bullock: "What are the chances that a given party will get up in a given year?" After considered reflection, he replied: "Fifty to one against." That answer also expressed my own feelings. Perhaps at a greater distance from the

mountain I am now more sanguine. If men could be found to besiege Everest year after year, I believe it would surrender at last. But the chances against any particular expedition are indeed very large. I assume that principles time-honoured in the Alpine Club will be honoured no less on Mount Everest than on other mountains. Climbers, of course, are always taking risks; but there are some which experience and *à priori* reason alike reject. A party of two arriving at the top, each so tired that he is beyond helping the other, might provide good copy for the press, but the performance would provoke the censure of reasonable opinion. If any one falls sick at the last camp, he must be taken down with an adequate escort and as soon as possible; and similarly on the final day. And coolies who become exhausted in carrying up their loads cannot be allowed to make their own way down; exhausted they are incompetent, and must be properly looked after. It is with such difficulties and such necessities that we have to reckon; and any reckoning, I believe, which fairly weighs the conditions and circumstances governing such an enterprise can only come to the conclusion that the chances in favour of success for any particular party are small indeed.

Before Colonel Howard-Bury's paper, Colonel Sir FRANCIS YOUNGHUSBAND, President R.G.S., after thanking His Royal Highness the Duke of York for honouring the Meeting with his presence, and reading telegrams of congratulation from the Alpine Club of Canada and the Société de Géographie de Paris, said: We are here to welcome back Colonel Howard-Bury and the members of the Mount Everest Expedition, and to congratulate them upon having exactly achieved the object with which they were dispatched, namely, to discover the most practicable way to the summit of the mountain. They were not instructed to attempt to reach the summit, or to break any record. That task was to be reserved for next year's expedition. But they were expected to find out what was without any shadow of doubt the most feasible way to the top, so that next year's expedition might, without any hesitation, go full speed ahead along that route, and that object they have most definitely and unquestionably accomplished. So now we can set about our main effort on the sure foundations which Colonel Howard-Bury and Mr. Mallory have laid, in perfect confidence that we are on the right track.

"Seek ye first the very highest, and all these things shall be added unto you." We sought first the highest mountain in the world, and now we are seeking the very top of that highest mountain. And already a number of most delightful things have been added unto us. First, we have Colonel Howard-Bury's graphic telegrams and the magnificent photographs which he and Mr. Wollaston sent back, revealing to us mountain scenery of a grandeur not to be surpassed, and the enjoyment of which can now be shared by men in every country and for all time—enjoyment which will be greatly increased when we have the paintings of the artist whom we shall be sending with the expedition next year. Then came Mr. Wollaston's natural history collections, telling us of the height to which life ascends on these highest mountains, and including seeds—already planted at Kew and Edinburgh, and in the Royal Horticultural Society Gardens—of new or rare primulas, gentians, and

rhododendrons and other plants which will add to the beauty of our gardens. After this came a map by Major Morshead, of the whole region ; and another by Major Wheeler, of the mountain itself and its immediate neighbourhood, is expected daily. An account of the geology of the region by Dr. Heron is on its way. Lastly has come the bill. We had expected it to be £5000. Actually it is only £4000—that is, excluding the expenses incurred by the Government of India on the survey.

These results were rendered possible in the first instance by the generosity of our Patron, His Majesty the King, and our Vice-Patron, H.R.H. the Prince of Wales, and other liberal donors to the funds of the expedition, especially the members of the Alpine Club, who, urged on by the persuasiveness of their President and the coerciveness of Captain Farrar, contributed more than £3000. But the chief credit for the satisfactory result is, of course, due to those who worked so arduously on the spot—to Colonel Howard-Bury, who with such skill and address conducted the expedition as a whole, overcame all initial difficulties, and brought the climbers up to the mountain ; to Messrs. Mallory and Bullock for their resolute persistence in ferreting out a way, when they were deprived of the guidance of that experienced Himalaya climber, Dr. Kellas, whose death we so deeply deplore, and of their mountain leader Mr. Raeburn ; to Mr. Wollaston for the thoroughness with which he carried out his scientific duties and looked after the health of the party ; to Major Morshead and Major Wheeler for their untiring energy in mapping so lofty a mountain region, and for the rapidity with which they have furnished us with maps ; and lastly to Dr. Heron, whose energy seems to have been remarkable even among such energetic men.

With this necessarily brief but most sincere acknowledgment of their services, I now invite the chief of the expedition to give us an account of his charge.

Colonel Howard-Bury then read the paper printed above.

Before Mr. Mallory's paper, Prof. J. NORMAN COLLIE, President of the Alpine Club, said : From a mountaineering point of view the Expedition to Mount Everest has been most successful ; an easy route has been discovered, free from any prolonged difficult climbing, by which it is hoped that next year the ascent of Mount Everest may be made. The ascent, however, could only be attempted in the very finest weather, and we are yet ignorant whether much climbing can be done as high as 28,000 to 29,000 feet. The Expedition was sent out this year primarily to make a complete reconnaissance of Mount Everest. This has been done thoroughly. On every side, except on the south, which is in Nepal, all the valleys leading to the great peak have been explored. The climbers, Messrs. Mallory and Bullock, with untiring energy, have been more than once to over 23,000 feet, visited many passes, and explored a large number of glaciers. A magnificent series of mountain photographs have been secured. Taking into consideration the difficulties of climbing at such altitudes, the mountaineers are to be congratulated warmly on their success.

Mr. Mallory then read the paper printed above.

The President expressed his great regret that the lateness of the hour made it impossible to call on Mr. A. F. R. Wollaston, the Surgeon and Naturalist of the expedition, for his account of the very interesting work on the flora and

fauna of the region. All present would be anxious to hear him on another occasion.

Monsieur A. GATINE (Vice-Président du C.A.F.): Mes premières paroles seront pour vous dire avec quelle gratitude le Comité de Direction du Club Alpin Français a reçu la cordiale invitation qui lui a été adressée pour cette réception magnifique des courageux explorateurs de l'Himalaya. Nous vous prions d'agréer les excuses et les regrets de notre Président, M. le Baron Gabet, que des nécessités impérieuses ont empêché d'être ici ce soir, comme c'était sa formelle intention. Nous sommes heureux, M. Henry Bregeault, Secrétaire-Général, M. Richard-Berenger, Membre du Comité de Direction, et moi, d'avoir en cette mémorable circonstance la bonne fortune d'être les porte-paroles du Club Alpin Français auprès des Membres de l'Alpine Club et de la Royal Geographical Society. Nous saluons dans ces deux Sociétés deux des Associations les plus anciennes et les plus actives du Monde, justement renommées pour leurs travaux et leurs publications. Elles ont su ne pas se reposer sur leurs lauriers, comme nous disons en France, et voici que, une fois de plus, nous les trouvons à la tête du mouvement et du progrès, à l'occasion de l'étude et de l'exploration du massif montagneux le plus haut du Globe. Nous ne saurions oublier que les Membres de l'Alpine Club ont toujours été parmi les plus actifs et les plus hardis des Alpinistes qui se sont attaqués aux cimes vierges de la Savoie et du Dauphiné. Les noms de beaucoup d'entre eux brillent au premier rang dans ce qu'on a appelé "la période héroïque de l'Alpinisme."

Cette période sera-t-elle couronnée, en quelque sorte, dès l'année prochaine par la conquête de la plus haute cime du Monde? Nous le souhaitons de tout cœur. Nous désirons en tout cas apporter dès à présent les félicitations du Club Alpin Français aux organisateurs que la confiance des deux puissantes associations a chargés de la préparation méthodique d'une expédition aussi hardie que l'assaut du Mont-Everest, et nous exprimons notre admiration aux Savants, aux Alpinistes, aux Topographes dont les travaux et l'endurance ont déjà obtenu ce superbe résultat de découvrir, dès cette première campagne au cours d'une ascension bravement poussée jusqu'à plus de 2000 mètres au-dessus de l'altitude du Mont-Blanc, une voie d'accès, qui paraît praticable, vers le sommet du Géant des Montagnes. Nous déplorons que de pareilles expéditions ne puissent se faire sans de très grandes risques, et nous souhaitons aux explorateurs de 1922 de revenir tous en parfaite santé, après que les Alpinistes de l'expédition auront eu l'honneur d'atteindre le plus haut sommet qui dans le Monde reçoive le baiser du soleil.

Mes collègues et moi, nous vous félicitons infiniment de la fraternité cordiale des Alpinistes Britanniques et Français, semblable à celle des combattants de nos deux Nations, qui ont souffert et lutté côte à côte pendant la Grande Guerre, et dans un sentiment de gratitude pour l'amiable accueil fait aux représentants du Club Alpin Français, nous souhaitons tous les bonheurs, tous les succès à votre Altesse Royale, à Monsieur le Président de l'Alpine Club, à Monsieur le Président de la Royal Geographical Society.

The President, in conclusion, offered the congratulations and thanks of the Meeting to the speakers, Colonel Howard-Bury and Mr. Mallory, and to all the members of the expedition; and in the name of the R.G.S. and the Alpine Club thanked the French Alpine Club for their signal proof of friendship in sending a distinguished delegation from France to attend the Meeting.

THE MOUNT EVEREST MAPS AND PHOTOGRAPHS.

By ARTHUR R. HINKS, C.B.E., F.R.S., Sec. R.G.S.

TWO maps are published with the present number of the *Journal* to illustrate the papers by Colonel Howard-Bury and Mr. Mallory, read at the joint meeting of the R.G.S. and the Alpine Club held at the Queen's Hall on December 20. Since both are preliminary and rather hastily made maps of hitherto unmapped country, it is necessary to explain, more fully than could be done on the face of the maps, the origin of each.

The survey party which, at the request of the Government of India, accompanied the expedition, consisted of Majors Morshead and Wheeler, two Indian plane-tablers, an Indian photographic assistant, and the necessary subordinates. Major Morshead and his plane-tablers mapped the whole country traversed by the expedition on the scale of 4 miles to 1 inch, with the exception of the area within about 10 miles of Mount Everest, which was reserved for photographic survey by Major Wheeler. A rapid triangulation was carried from the existing triangulation at Kampa Dzong (made by Col. Ryder on the Tibet Mission of 1903-04) as far west only as Tinki; from that place the plane-table sheets are based on intersected points determined by Col. Ryder. In the valleys to the extreme west of the area mapped, bad weather obscured all the summits and made plane-tabling impossible; the map in these districts depends on a rough time- and compass-traverse by Major Morshead.

Fair tracings of the plane-table sheets were kept up as far as possible during the progress of the work in the field, and were rapidly completed on the return to Darjeeling, so that within three weeks copies reproduced by the Vandyke process in six colours were available in Calcutta, and a large number have been received in England for the use of the 1922 expedition. The area reserved for photographic survey is marked by a red line, but within this line there is shown a great deal of detail which seems to have been sketched in by the plane-tablers from without. A note states that this detail is shown only "with approximate accuracy." The photographs brought back by the expedition prove clearly, however, that this estimate is too high: the detail within the boundary should be neglected. In particular, the East Rongbuk glacier, which is the key to the position, is omitted; the main glacier is named the East Rongbuk glacier; and the name "West Rongbuk glacier" is in the wrong place.

The tracing of his first sketch-map from the photographic survey, which was covered by a letter received from Major Wheeler on December 12, was not itself received until December 28, having apparently missed

a mail, and then gone all the way round by sea. For the meeting on December 20 it was necessary to produce some kind of map of the mountain area. Experiments made by Mr. Hinks showed that it was possible to measure approximately rounds of angles on the panoramas made by Colonel Howard-Bury with a 5-inch Panoram Kodak from a number of well-chosen stations east and north of the mountain. The positions of the stations could be re-sected from the few peaks whose places had been triangulated from the plains of India. When the stations were fixed, other points could be intersected, and a framework thus constructed. A careful repetition and extension of this process by Mr. Batchelor fixed the principal points east and north of the mountain. Mr. Frank Debenham, University Lecturer in Cartography at Cambridge, then kindly gave a few days' hard work to sketching the topography from the photographs; and Mr. Milne, from all this material, made the drawing which was shown on the screen at the meeting of December 20. The topography west of the mountain, for which there were no panoramas, was very doubtful.

When on December 28 Major Wheeler's preliminary map from the photographic survey came to hand, it was seen at once that it could not be reproduced as it stood, and that there was no time to do it justice by completely redrawing it for reproduction in this number of the *Journal*. It was therefore put aside for the moment, and Map II. now published has been completed by Mr. Milne from the drawing made for December 20, with further study of the photographs, helpful criticism and explanations by several members of the expedition, and the use of a compass sketch of the Rongbuk district produced by Mr. Bullock. Nothing has been taken from Major Wheeler's map, and no comparison with it has been made up to the present, in order that Map II. should be available as an eventual test of what may be done from the rapid study of panoramic photographs.

Meanwhile Map I. on the scale 1/750,000, has been reduced from Major Morshead's map, extended east of Tinki from existing Survey of India maps, and completed in the reserved area by a reduction from Map II. There has been no time to prepare a hill-shaded or hachured plate from Major Morshead's map; but this will now be taken in hand by Mr. Batchelor, and a fully hill-shaded map should be ready for the book on the Expedition of 1921, which will be published by Mr. Edward Arnold in the spring.

Within the last few days we have received, by the courtesy of the Surveyor-General of India, typed copies of the reports made to him by his two officers, and we hope to give some account of these reports in a future number of the *Journal*. To have surveyed 12,000 square miles of new country on the 1/4 inch scale in a single season, and published

a map in six colours three weeks after the return to civilization, is no mean achievement. To what, asks M. Rabot, in *L'Illustration*, is this excellent result due? To the admirable invention of a French officer: photographic survey! The claim is characteristic, but ill-founded. The late Colonel Laussedat certainly wrote books about photographic survey many years ago, but he never persuaded his own countrymen there was much in it. The Canadian methods employed by Major Wheeler were developed by Mr. Deville, the Surveyor-General of Canada. Whatever merit they have, when applied to Mount Everest, remains to be proved, and will not be known for several months yet: there are those who think that only stereographic survey can be of much effect in such wonderful country. In any case, the 12,000 square miles of survey to which M. Rabot referred owed nothing to any photographic method, French or otherwise. They were done with the plane-table, whose proper use was discovered by the Survey of India.

In discussing the photographs published in former numbers of the *R.G.S.F.*, we were compelled to use the unsatisfactory method of assigning arbitrary letters for reference, or of using English descriptive names, as the North Peak. It is now time to make suggestions for a more convenient nomenclature.

Mount Everest must, as an exceptional case, retain the European name by which it has long been known to us, though we are now sure that the Tibetan name is Chomo Lungma: the mountain is so named in the passport for the expedition issued by the Prime Minister of the Dalai Lama. But successive Surveyor-Generals have resolved, in full agreement with this Society, that no more European names shall appear on Himalayan maps. Last year's expedition has discovered a certain number of Tibetan names, Chomo Lönzo for peak N 53 of the Survey—not for Makalu, which is not conspicuous from the camping-grounds in the Kama valley—Cho Uyo for Pk. 5/71L (26,867), and Gyachung Kang for Pk. 3/71L (25,990); but no names are discoverable for most of the features which figure prominently in the narrative. Our best course is then to take convenient descriptive names and turn them into Tibetan. Colonel Howard-Bury and Major Morshead had already agreed that Pk. 8/71L (23,800) at the head of the Kharta valley should be called Khartaphu; that the isolated peak in the gap between Mount Everest and Makalu should be called Pethang peak, from the camping-ground of Pethang Ringmo opposite; and the windy pass at the head of the Kharta glacier Lhakpa La. After consultation with Colonel Howard-Bury and Mr. Mallory, Tibetan equivalents for other peaks were suggested and submitted for criticism to Sir Charles Bell on his recent return to England from Lhasa, with the following results:

The south peak of Mount Everest (28,100)	...	...	Lhotse.
The north peak	...	...	Changtse.
The north col	...	...	Chang La.
Pk. 6/71L	...	...	Khartichangri.
The group of mountains at the head of the Rongbuk valley lying like an island between the Rongbuk and West Rongbuk glaciers in front of the north-west ridge			
	...	...	Lingtren.
The small peak west of this in the West Rongbuk glacier, referred to as the Island peak			
	...	...	Lingtrennup.
The white snow-peak climbed by Mallory on August 7, at head of Kama valley			
	...	...	Kartse.
The peak with the long ridge climbed on July 5 near the head of the Rongbuk valley			
	...	...	Ri-ring.
The peak north of the Kama valley and south of the advanced base in the Kharta valley			
	...	...	Kamachangri.
The fine isolated rock peak west of Mount Everest and south of the West Rongbuk glacier			
	...	...	Pumori.
The Pethang peak			
	...	...	Pethangtse.

One considerable advantage of these names is that they will mean something to the Tibetan coolies, and will be convenient in giving instructions.

It is not proposed for the present to give special names to the various features of the mountain: we shall speak of the summit, the north-east shoulder, the north-eastern and northern arêtes which meet at the north-east shoulder, the summit ridge from the north-east shoulder to the summit, the north-western and western ridges enclosing the western cwm. The northern arête, which is the chosen route for the assault, is very obtuse, hardly more than a slight bend in the northern face, and for the time being it seems convenient to speak of the whole, nearly flat face between the north-eastern and north-western arêtes as the north face, although the northern arête divides it into two parts slightly inclined one to the other. The triangular face below the north-eastern arête will be called the north-east facet.

From the admirable collection of photographs brought home by the expedition we have chosen for reproduction this month a series that illustrates pretty completely the topography of the mountain; they have, in fact, formed the principal material for the construction of Map II.

The Lingtren group (Plate 1) stand at the head of the Rongbuk valley in front of Mount Everest, but quite detached from it. Between this group and the end of the north-west ridge just appearing over the crest is a glacier pass reached by Mr. Bullock, connecting the south-

western head of the Rongbuk glacier with a southern branch of the west Rongbuk, seen on the right in Plate 3.

The northern ridge (Plate 2) descends sharply to the eastern bank of the Rongbuk glacier, straight and nearly unbroken from the Changtse to the exit of the East Rongbuk glacier (Plate 9). But behind it lies the long unsuspected East Rongbuk glacier, the key to the whole problem, shown in Major Wheeler's photographs (Plates 10 and 11). This East Rongbuk glacier must have a larger basin than the main Rongbuk: many tributary glaciers descend to it from the high plateau eastward (Plate 11); it drains a large basin north of Changtse and east of the north ridge (Plate 10); and it has a broad head between the Lhakpa and the Chang La under the northern face of Mount Everest (Plates 18 and 21). Yet its glacier torrent, which runs for a mile or so under the lower end of the main Rongbuk glacier, was relatively small at the end of June, and did not in the least suggest an important glacier just out of sight round the corner.

The very interesting photograph No. 3 was taken from somewhere on the peak in the left foreground of No. 4, and is the only picture we have showing nearly the full extent of the north-west ridge, that here forms the watershed. The long narrow glacier in front of it is an affluent of the West Rongbuk: beyond it lies the deep and sombre western cwm, whose glacier drains into Nepal. Mr. Mallory reached the glacier pass looking into this cwm (beyond the end of the north-west ridge in Plate 4) and took the photograph No. 6, which shows the glacier after its exit from the cwm flowing away south into Nepal. The photograph from the same point looking up the dark western cwm at sunrise is hardly strong enough for reproduction.

The watershed crosses the pass and rises to the beautiful Pumori (the Daughter peak), whence it evidently runs along the range shown in Plate 5. But its further course is at present quite uncertain. Major Morshead in his report to the Surveyor-General makes it run through Gyachung Kang. This is difficult to reconcile with the panorama No. 10 of the December *R.G.S.F.* and with other photographs more directly looking up the West Rongbuk glacier, which seems to lie south of Gyachung Kang and Cho Uyo. The glacier is described as coming from a pass leading into Nepal, but this does not help to determine the question. On discussing the matter with Mr. Bullock, it was agreed that there is nothing at present to exclude the possibility that the head of the West Rongbuk is not far from the Khombu pass, in which case Gyachung Kang and Cho Uyo would seem to lie altogether in Tibet.

To return eastward, the approach to the Chang La from the eastern head of the Rongbuk glacier (Plate 7) looks steep and difficult: there is every reason to prefer the East Rongbuk route, which has, according to

Major Wheeler, an easy medial moraine, perhaps as far as the glacier junction shown in Plate 11. The ridge to the left of Changtse in Plate 10 is the same as that seen on the right of Changtse in No. 14. The three photographs, Nos. 10, 11, 14, show between them the whole extent of the glacier, and no clear evidence of any serious icefall. The glacier seems steepest in the centre of No. 10, not far from its snout. Just above the snout, to the north, is a fine rock peak (Plate 9) which is almost certainly the "light rock peak flecked with snow" shown in Dr. Kellas' now famous photograph from the Kang La (see *Geog. Journ.*, April 1921).

The panoramas Nos. 13 to 16 were the foundation of Map II. Chomo Lönzo, Makalu, the point to the right of the big cirque south-east of Mount Everest, the summit, Khartaphu (No. 13), and Khartichangri (No. 15) were all fixed many years ago from the south. A few trials verified the identifications, and the camera stations were resected. They are shown in red on the map. Pethangtse, Changtse, Lhotse, and the unnamed peak beyond the camp on the Lhakpa La (No. 14) were then fixed by intersection, and the rest followed. It would have been easier if the panoramas had included the whole 360° instead of falling generally a little short, and this will be rectified in the next season. It would not have been difficult to determine approximate heights from these panoramas if one were certain that the camera was carefully levelled; but time has not allowed any experiments in this direction.

Plates 12 and 20 were taken from nearly the same point, just above the 20,000-foot camp on the stony terrace above the left bank of the Kharta glacier. The first is a tele-photograph, with all the curious want of perspective that is inherent in such pictures. If it were not for the cloud that has happily filled the cirque one would scarcely realize that the knife-edges, with their magnificent snow fluting, are far in front of the mountain. They are actually the rims of the great cirque at the head of the Kama valley (EL and EM of Plate 12, December *R.G.S.F.*). The peak away to the right in Plate 20 is not Changtse, but the sharp peak beyond the camp in No. 14.

Plate 21 shows in profile the north arête which is seen much foreshortened in No. 19—a combination of two photographs taken with a V.P. Kodak looking right up the northern face, with the north arête to the left. It joins the north-east arête just above the pinnacles of the north-east shoulder, at about 28,000 feet. The slope from the Chang La to this shoulder is a little more than 30° ; from the shoulder to the summit a good deal less until near the end, which is steep. The arête is broad, with room to circumvent obstacles. It happily avoids the nasty-looking horizontal band of steep rock on the north face; and one could hardly expect to find a better way. But the gales of September 1921, whose

effect is seen in plate 20, absolutely forbade any further progress beyond the end of the footprints seen in No. 19 in the left-hand corner.

On the way home to Kharta Colonel Howard-Bury, Mr. Wollaston, and Major Wheeler made a *détour* through the Kama valley, descending by the snow pass north of Kartse: the peak climbed by Mr. Mallory on August 7. Plate 8 shows that he was fortunate in approaching this peak from the east. Colonel Howard-Bury crossed the horribly ugly Kangshung glacier early one morning and climbed to a point on the snowy ridge immediately to the right of Makalu in No. 13, from which he took the most instructive panorama No. 16 and other excellent pictures of the inside of the Makalu and Chomo Lünzo group. Comparison with No. 3 of the December *R.G.S.F.* will show how unexpectedly thin is the mass that looks so imposing from below the Langma La.

The panorama No. 17, showing the whole extent of the upper Kama valley from the south, was taken lower down on the way back to the camp at Pethang Ringmo, from which Mr. Wollaston obtained two photographs of Chomo Lönzo that are technically the finest of all the pictures taken this year. Enlargements from these plates were shown at the Alpine Club Hall exhibition, and are in the photograph room of the Society: it is not possible to do justice to them in the small page of the *Journal*.

In choosing the photographs here reproduced we have kept close to Mount Everest: the many beautiful pictures taken further afield and on the way back down the Chumbi valley have been set aside for the moment, with one exception. It is necessary to close this series with a mountain 35 miles west of Mount Everest, much inferior in height, much superior in beauty: Gaurisankar. Many years ago two Germans mistook it for Mount Everest; and though the error was soon detected, and the Survey of India took special pains to dispose of it, the name Gaurisankar appears as alternative to Mount Everest in one of the best and most recent atlases, and is still frequently used in certain countries of Europe. There have even been applications from persons abroad to join the Gaurisankar Expedition!

We are greatly indebted to the Royal Geographical Society for permission to have the preceding papers from their February *Journal* reprinted from their type. They have also kindly authorized the reproduction from their blocks of the full set of plates and maps.

The plates in the present number will be readily followed by the careful reader of Mr. Hinks's explanatory paper. Plate 1 is taken looking south from west bank of main Rongbuk glacier. Bullock's col connects the S.W. head of this glacier with the glacier flowing from the

west arm. Plate 2 is taken from the south branch of the west Rongbuk glacier. Plate 21 does not show much of the east Rongbuk glacier, while Plate 14 shows little of the glacier, but gives a good view of the valley in which it lies.

Plate No. 10 may be further explained by mentioning that the upper part of the east Rongbuk glacier seen in the photograph is the S.W. branch, and that the main or S.E. branch is hidden by the foreground in the bottom left-hand corner; and that Plate No. 11 shows this S.E. or main branch being joined by the S.W. branch, the latter disappearing in the right-hand part of the photograph. If the outline of the snow-field in the immediate foreground of the bottom right-hand corner of Plate No. 11 is drawn attention to, it is fairly easy to see to what parts of the East Rongbuk glacier the views refer. The three fingers of snow at the foot of this snow-field form a distinctive feature which reappears almost in the very centre of Plate No. 10, and in the distant part of the East Rongbuk valley on the right hand of Plate No. 14. The third or small finger of snow can be distinctly seen by a magnifying-glass in the latter plate.

—THE EDITORS.

THE OXYGEN EQUIPMENT OF THE 1922 EVEREST EXPEDITION.

By P. J. H. UNNA, Oxygen Sub-Committee, Everest Expedition.

OXYGEN for climbing purposes would in all probability not have been sent out with the 1922 expedition to Mount Everest if Dr. Kellas, in the report of his expedition to Kamet in 1920, had not referred to the difficulty in getting Primus stoves to burn at high altitudes (see *R.G.S.J.*, February, 1921). For the 1921 expedition sample stoves with burners of all three types, roarer, silent and tubular, were sent to Mr. G. M. B. Dobson, lecturer in meteorology at Oxford University, for tests, which he made in a vacuum chamber in the laboratory of Professor G. Dreyer, F.R.S., the professor of pathology.

Captain Finch and the writer went to Oxford in March 1921 to see Mr. Dobson, and met Professor Dreyer, Major H. F. Pierce, who is working at Oxford on behalf of the Medical Research Council, Dr. F. G. Hobson, and the late Mr. G. F. Hanson, who were all engaged on work connected with the vacuum chamber. Colonel Dreyer, who during the war had been consultant to the R.A.F., G.H.Q. in the field, and has probably carried out more research work with oxygen at high altitudes than any one else in the country, expressed strong views about the desirability of using oxygen in the attempt on Mount Everest. He said: "I do not think you will get up without, but if you do succeed you may not get

down again." We told Captain Farrar, member of the Everest Equipment Committee, of this, and he at once expressed a wish to meet Prof. Dreyer.

The stoves were duly altered for high altitude use, and Captain Farrar drove Captain Finch and the writer down to Oxford on the Good Friday of last year to witness the tests. Professor Dreyer easily convinced Captain Farrar that the question of oxygen ought to receive serious consideration, but it was then too late for that year.

Finch stayed at Oxford overnight in order that experiments might be carried out on him in the vacuum chamber, while not breathing oxygen, on the following day. The following is an extract from Professor Dreyer's report on these experiments :

"For the exercise the following procedure was adopted: Captain Finch, carrying a load of 35 pounds slung over his shoulder, stepped up on to a chair, first with one foot and then with the other, twenty times in succession. The rate, chosen by Captain Finch, was that corresponding to a fairly rapid climbing pace.

Protocol (21,000 feet).

"*Results, not taking oxygen*: Simply standing, carrying the load, his pulse was about 104. Immediately after the exercise (stepping up on to the chair twenty times in $2\frac{1}{2}$ minutes) the pulse was 140.

"*Results, taking oxygen*: Standing, with load, his pulse was 77, as compared with his normal pulse, standing, of 68. Immediately after the exercise (stepping up on to the chair 20 times in 2 minutes) his pulse was not above 100.

"The striking effect of taking oxygen is obvious from these figures.

"Apart from the effect upon pulse, there was a marked change in his whole condition and appearance shortly after he began to breathe oxygen. His expression and colour became normal, and his elasticity of movement returned, as shown by the fact that although he attempted to maintain the same rate for his exercises in both cases, he unconsciously shortened the time from $2\frac{1}{2}$ to 2 minutes."

Trials had been made on Kamet on behalf of the Oxygen Research Committee by Dr. Kellas in 1920 to determine the extent to which oxygen might be of assistance in climbing. Experiments were made both with oxygen stored in cylinders and with oxygen obtained from the chemical action of water upon peroxide of sodium, Professor Leonard Hill's Oxylithe bags being used in the latter case. The results appeared to be largely negative, or at all events not very hopeful. They will be found in the *R.G.S.F.* of February 1921. On the other hand, it will be noticed that there are several points which render these experiments, as recorded, indecisive. First, heavy cylinders were used which were of three times greater weight than necessary.

Secondly, the main experiments with bottled oxygen started at a height of 18,000 feet. It is evident that if one loads a man with 20 pounds of bottled oxygen at sea level, where he does not require an artificial supply, he will be handicapped by the weight. Suppose for a moment that at 29,000 feet oxygen offers a considerable advantage; there must be an intermediate, critical, level at which the benefit derived from oxygen just balances the drag of the extra weight carried. At still lower levels oxygen would be a drag. 18,000 feet may be below that critical level for coolies, probably well acclimatized, on whom the experiments were carried out. The bottled oxygen for the 1922 expedition is not intended for use below 23,000 feet.

Thirdly, coolies, not being accustomed to use a somewhat complicated apparatus, would no doubt be more hampered by it than educated Europeans.

Fourthly, the report is silent as to the consumption of oxygen, a most important point, since the rate has to be adjusted to the altitude and the individual.

Fifthly, the bags should be used while resting, not while climbing, a fact which detracts from the second set of experiments, and they are expected so to revive the climber that he will be able to continue climbing comfortably for a considerable time. Obviously the first time test should be without using, and the second after using, the bag. Actually the first test was made on men who had used the bag, and the second on the same men "after about fifteen minutes," when they should still be feeling the full benefit.

That these experiments should be open to criticism is not surprising. Dr. Kellas read an exceedingly able paper before the R.G.S. in May 1916 (see *R.G.S.F.* of January 1917), on mountain sickness. He deals with the difficulty in performing mental work at high altitudes, and the possible unreliability of experiments carried out at such levels.

The low pressure chamber at Oxford is a cylindrical steel chamber, 7 feet in diameter and fitted with an air-tight door and glass windows. When in use the air is exhausted by an electrically driven air pump. The pump is kept continually working at full power, and the pressure in the chamber is controlled by means of a screw down cock on the air inlet pipe, the cock being closed to the extent necessary to reduce the pressure at the rate, or maintain it at the level, required. The controls are situated outside the chamber, and are worked by an operator, who not only adjusts the pressure but also has charge of the artificial oxygen supply for breathing purposes. He and the persons in the chamber can communicate with each other by telephone.

No one in the chamber is allowed to dispense with oxygen, unless accompanied by a medical man, who is taking oxygen himself, since

the approach of unconsciousness cannot be self-detected, and the unconscious condition demands instant application of oxygen. On the other hand, those taking sufficient oxygen to compensate for the reduced supply obtainable from the rarefied air are quite unaffected by the reduction of pressure, the only symptom being possibly slight discomfort in the ears if sea level is regained too rapidly.

Results of experiments in the chamber are apt to magnify the effect of lack of oxygen, because the conditions do not admit of acclimatization. On the other hand, this tendency to exaggeration is partially compensated by the fact that the chamber is kept at normal room temperature by an electric heater, and the subject is not fatigued by prolonged exertion, or exposed to the effects of strong wind.

The following are the chief effects of low pressures when not inhaling oxygen:

The face and hands lose their red colour and become blueish, especially the finger nails.

Breathing becomes faster, even without exercise.

The blood turns a very dark red.

The subject tends to become incapable of taking exercise.

The pulse quickens to over 100 and may reach 140 or more.

The symptoms, of which the subject is unaware, of the approach of unconsciousness are mental confusion and a tendency to quarrel, while the blueness becomes more marked. After having been brought round by a dose of oxygen he is frequently unaware that anything out of the normal has taken place. Those taking oxygen retain the red colour in face and hands and the normal colour in their blood, nor do they exhibit the other symptoms.

Those who listened to Mr. Mallory's second lecture cannot fail to have been struck by the condition of breathlessness which affected him at considerably under 23,000 feet on the ascent of the North Col. Where Mallory blows what chance is there for others? Instantly the absolute necessity of artificial aid to respiration became the most obvious question. Accordingly on January 13 Captain Farrar (Equipment Committee), Captain Finch, Mr. Somervell, and I once more set out for Oxford.

Both Finch and Somervell were pumped up to 23,000 feet without oxygen, while Major Pierce and Dr. Hobson inhaled it. The manner in which the two latter maintained their normal appearance was most marked. Finch, with a 30 lb. load, stepped on and off a chair twenty times without apparent difficulty, at the rate of eight seconds per step. Somervell, similarly loaded, started at five seconds a step, but was stopped after the fifth step, and oxygen forcibly administered to prevent fainting, since he had become so muzzy that he could not place his foot accurately. Small doses were sufficient, but he was not allowed to continue the exer-

cise. He vigorously denied that he felt any ill effects, thus exhibiting the symptoms previously described.

Immediately after our return to London a detailed report was made to Professor Norman Collie, F.R.S., and after careful consideration he determined to recommend to the Everest Committee that oxygen should be supplied for the expedition.

Upon his recommendation, and after having heard what those who had been to Oxford had to say, the committee, at which, besides the ordinary members, Drs. Longstaff and A. F. R. Wollaston were present, voted a sum for the purpose, and appointed Captain Finch, Mr. Somervell, and myself to act with Captain Farrar to carry the matter through.

Colonel Amery used his influence in obtaining the co-operation of the Air Ministry, and the Secretary of State immediately issued instructions to his staff to assist and advise us.

Fortunately, though after some trouble, we were able to secure a supply of bottles of light aero cylinders made by the Metallic Seamless Tube Co. for high flying purposes, and designed for a working pressure of 150 atmospheres. They are 1 foot 9 inches long, 3 inches diameter, $\frac{1}{16}$ inch thick (thicker at ends), and at 150 atmospheres the stress in the metal—0.29 carbon, Swedish, steel—is 23 tons per square inch.

Exhaustive tests at the National Physical Laboratory indicated that the charged bottles, dropped from a height of 30 feet on to a concrete floor, suffered nothing more serious than leakage at the valve, but to allow for a further margin of safety it was decided to charge to 120 instead of 150 atmospheres. Their water content is 2 litres, so that when charged at 120 atmospheres they hold 240 litres of oxygen, n.t.p. (measured at normal temperature and pressure). Charged to 120 atmospheres their weight, including the stop valves, is about $5\frac{3}{4}$ pounds, of which 0.8 pound is due to the oxygen.

Special arrangements were made by the British Oxygen Co. for drying the bottles after the hydraulic test, but before the stop valves were fixed, and for passing the oxygen over calcium chloride before it entered the bottles, thus minimizing the risk of any valve choking through frozen moisture. The bottles were painted white, as a prevention against undue heating in the sun, which would not only raise the pressure but might make them uncomfortably hot to handle, and were packed six in a case for transport. The gross weight is painted on each bottle, so that the oxygen content can be tested by weighing.

The next thing to consider was the design of the breathing apparatus. A meeting was held at the Air Ministry on January 31st, at which Professor Dreyer was present. On main principles his advice was requisitioned and followed, but the working out of the details is entirely due to Major C. J. Stewart and Mr. G. F. F. Eagar, of the Research Department of the

Air Ministry, and to Mr. R. H. Davis, the managing director, and Mr. C. Rosling, of Messrs. Siebe Gorman, who made the gear. This part of the apparatus was taken as hand luggage by the climbing party who left London on March 2nd. The bottles, 120 in number, had been shipped in advance as deck cargo in S.S. *Chilka*.

An ingenious carrying frame, made by the Bergans Meis of Christiana, was adapted to carry four bottles upright. A projecting arm of steel tube, fixed to the frame, passes over the left shoulder to the front of the body and terminates at a level midway between the elbow and armpit. It carries the two high pressure tubes, which are strapped on to it, and at its extremity a base plate to which the regulating gear is fixed.

Professor Dreyer was most insistent that the supply of oxygen, once started, should not be interrupted, and he laid down the following requirements:

- (a) The means of supply from bottle to mask should be in duplicate.
- (b) It should be possible to change over from one bottle to another without interruption of the supply.
- (c) It should be possible so to change over, and also to remove used bottles from the carrier and replace them with full ones, without the assistance of a second man.

Requirement (a) is necessary both for the purpose of giving effect to requirement (b), and to provide a second means of supply in the event of the failure of the first.

To comply with requirement (a), two bottles are always connected up at the same time. A high pressure copper tube is led from each bottle. At one end each tube is connected to its bottle, and at the other it is provided with a stop valve. After passing these valves the gas comes to what is in effect a five way junction. The two routes for the gas from the bottles enter the junction by two of these ways, and there unite. Two of the other ways are exits, one leading through a pressure reducing valve, a control, or, as it is usually called, fine adjustment valve, and a flow meter, and then by a flexible rubber tube to the mask, and the other through a by-pass, which is fitted with a valve, and which short circuits the reducing and fine adjustment valves and flow meter, and allows the gas, in the event of any failure of the normal route, to be switched on to the flexible tube direct. The fifth way leads to a pressure gauge.

The flexible tube is of sufficient length to allow of the carrier being taken off the back and placed upon the ground without the mask being taken off the face. Bottles can thus be taken out of the rack, or placed in it, and the stop valves on the bottles manipulated so that a change over from one to the other can be effected without interruption of the supply.

The following is a detailed description of the breathing apparatus: The general arrangement of the apparatus is shown in the accompanying

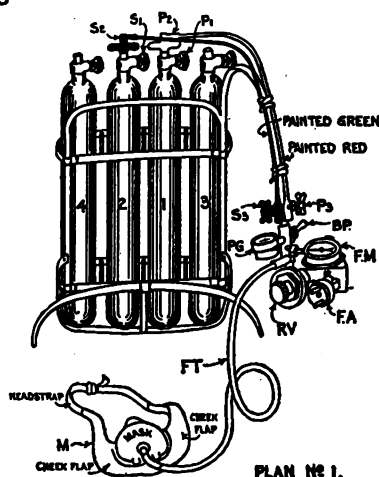
plan No. 1. The high pressure tubes are coupled to bottles 1 and 2 by the unions P_2 and S_2 , and are fitted with stop valves P_3 and S_3 at their other ends. P_1 and S_1 are the stop valves on these bottles. Bottles 3 and 4 are spares. When bottle 1 is in use P_1 and P_3 are open. When it has been used up the apparatus is taken off the back, S_1 is opened, and then P_3 is closed, and S_3 opened immediately afterwards. Then the union P_2 is unscrewed and bottle 1 removed, and bottle 3 put in its place and coupled up by means of P_2 . Then the carrier is replaced on the back.

The apparent positions of the stop valves S_1 and P_1 may become reversed relatively to those of S_3 and P_3 when the carrier is taken off the back and placed on the ground. This is liable to be rather confusing,

HIGH PRESSURE OXYGEN APPARATUS DESIGNED FOR MOUNT EVEREST COMMITTEE

- P_1 - PORT CYLINDER STOP VALVE.
- P_2 - PORT " UNION.
- P_3 - PORT STOP VALVE.
- S_1 - STARBOARD CYLINDER STOP VALVE.
- S_2 - STARBOARD " UNION.
- S_3 - STARBOARD STOP VALVE.
- BP - BYE PASS.
- FM - FLOW METER.
- PG - PRESSURE GAUGE.
- FA - FINE ADJUSTMENT VALVE.
- RV - REDUCING VALVE.
- FT - FLEX TUBE.
- M - MASK.

NOTE:- ONLY THE METAL PARTS OF THE CARRIER ARE SHOWN,
THE SHOULDER AND WAIST STRAPS BEING OMITTED.



PLAN No. 1.

and to prevent mistakes the union S_2 and the valve S_3 and the pipe connecting them have been painted green, and the corresponding parts on the left side red.

The pressure, as read on the gauge PG , serves as an indicator of the quantity of oxygen left in the bottle that is in use.

The oxygen after passing the stop valves is reduced in pressure by the reducing valve RV . The rate of supply is controlled by the fine adjustment valve FA and indicated by the flow meter FM . The by-pass valve BP is normally kept closed, and would only be opened in the event of the failure of the route through RV , FA , and FM . The reducing valve is Messrs. Siebe Gorman's Air Board pattern valve. It was specially designed for use in high altitude flying during the war. The flow meter is their Improved Vane type.

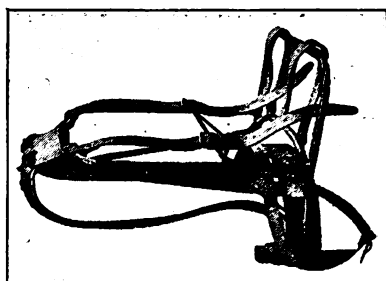
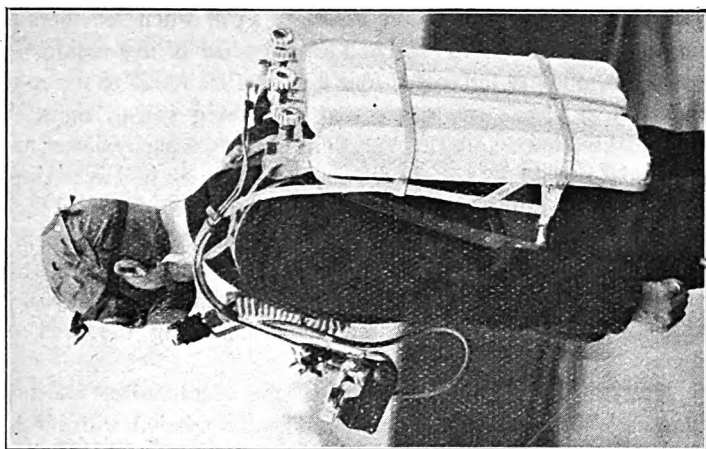
The flow meters were calibrated in the laboratory of the Air Ministry, by allowing gas to pass through them at normal pressure. The volumes necessary to give the required true mass deliveries at the various altitudes at 32° Fahr. were obtained by calculation, and then the dials were graduated in terms of altitude. These deliveries, specified by Professor Dreyer, are as follows :

Altitude.	Rate of flow of oxygen in litres per minute, measured at 32° Fahr., and at pressure of 29½ inches of mercury.						
23,000	2'0
25,000	2'2
27,000	2'3
29,000	2'4

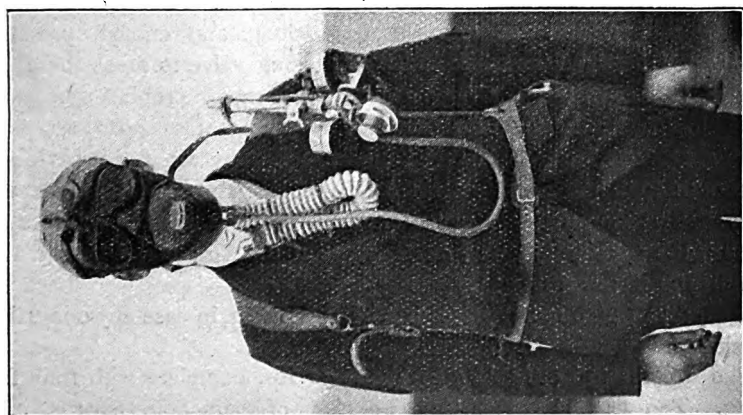
Two masks of different types are supplied with each set of apparatus. Each type covers both the nose and mouth, but before describing them it will be best to point out a matter which controls the design and has an important effect upon the consumption of oxygen. When one is resting at sea level the period of expiration is double that of inspiration, and while exercise is being taken, or when at high altitudes, the two periods are more nearly, or quite, equal. The flow of oxygen from the bottles is continuous, and unless steps are taken to control it at the mask, the oxygen supplied during the period of expiration will be merely blown away with the expired breath without having been inhaled at all, with the result that, to pass the quantities specified by Professor Dreyer into the lungs, the rates of delivery given above would have to be doubled at least. Either the oxygen delivered during expiration must be stored for future use, or the flow must be arrested. In the "Economizer" mask the former means is adopted, while the "Standard" mask, which has been supplied as a stand-by, has been modified, at the suggestion of Professor Dreyer, so that the flow can be interrupted during expiration.

The Economizer mask is the joint patent by Lady Briscoe and Mr. Eagar. The essential parts of this mask are a flexible corrugated indiarubber tube and a valve chamber from the bottom of which it hangs. The chamber has two valves, an admission valve near the bottom, and an exhaust valve near the top. These valves are flap valves of special design and made of indiarubber. The corrugated tube holds sufficient oxygen for one breath. Its outer end is open to the atmosphere. The oxygen supply is admitted at the other end, near to where it joins the valve chamber. Consequently a complete breathful with the required proportion of oxygen can be drawn from this tube, which is kept bent double, in the form of a U, so that the oxygen, being heavier than air, cannot escape through the open end. The valves work automatically, as the breath is sucked in and blown out.

There is one important point to be attended to with this type of mask.



CARRYING FRAME.



OXYGEN APPARATUS WITH ECONOMIZER MASK AND CARRYING FRAME.

The valve openings must be of ample area. The breathing apparatus was tested at the Air Ministry on February 23rd, when members of the climbing party assembled to receive a short course of instruction. Each was made to run up at full speed four flights of stairs on to the roof with the apparatus in actual use, to see that everything was all right. They were thoroughly blown, and Dr. Wakefield nearly got asphyxiated, as when panting hard he could not get enough air, and the mask had to be ripped off his face. As originally designed it was not intended for hard exercise. The flap of each valve is square, and is held in position by being stuck down at the four corners, but not along the sides, which lift under the pressure or suction of the breath. All that was necessary was to make two opposite corners free, thus increasing the area of the openings.

To forestall the possible difficulty in the Economizer mask of the valves getting frozen on account of the moisture exhaled with the breath, as much of the outside of the valve chamber as possible has been covered with felt to conserve the heat.

If the valves of the Economizer mask do get frozen, the Standard pattern mask will have to be used. This mask consists of a flexible copper dome covered with chamois leather, which can be easily bent to fit the face of the wearer. The oxygen supply pipe passes through the mask, into which it discharges without any valve, and there are openings in the mask for the discharge of the exhaled breath, also without valves. The oxygen pipe does not end at the mask, as is usually the case, but, at Professor Dreyer's suggestion, is continued inside by means of a short piece of stiff rubber tubing, which can be gripped between the teeth, and so closed during expiration. To do this appears to become almost automatic after a little practice. The first time this modification was tried the rubber tube was kept closed too long, and enough pressure accumulated between the mask and the reducing valve to break the glass cover of the flow meter, so a rule has been made that the rubber tube must not be closed with the teeth for a continuous period of over two seconds. If this glass does break the oxygen might leak away whether it has been directed through the reducing valve or the by-pass, in which case the supply to the mouth would cease entirely. So it is covered with a talc disc and the gas-tight joint is made between the flow meter casing and the talc, and not with the glass.

A supply of pipe mouthpieces has been sent out, in case any one using a mask should get claustrophobia.

The whole apparatus weighs about 32 lbs. complete with four full bottles. Ten sets have been sent out, four of them being spares. An apparatus complete with bottles has been sent with the party for a daily course of instruction during the voyage.

As each bottle is charged with 240 litres of oxygen, n.t.p., and as the rate of consumption is expected to be from 2'0 to 2'4 litres per minute, one bottle will last from 2 hours to 1 hour and 40 minutes, so the full load of four bottles would not provide for a climb lasting much longer than 7 hours. Now, in addition to specifying the rates of consumption of oxygen while taking exercise, Professor Dreyer has made the following recommendations :

- (a) Oxygen need not be used below 23,000 feet.
- (b) Oxygen should be taken at all times above that level.
- (c) The rate of consumption while not taking exercise should be one litre a minute, even while sleeping.
- (d) That it will be equally important to use oxygen while descending as during the ascent.

Compliance with these requirements would make the establishment of a camp above the level of the North Col practically impossible. But as Professor Dreyer confidently expects that the artificial supply of oxygen will make the climbers as physically fit as they would be at some altitude between between sea level and 15,000 feet without it, it may be found possible to rush the last 6000 feet of the mountain in one day, provided that bottles of oxygen be laid out ahead in depots.

The question of the most economical system of laying out bottles in depots has been carefully considered. It is complicated by the fact that those who lay out the bottles will have to use oxygen in doing so. For the purpose of evolving a scheme it has been assumed that the rate of descent would be twice the rate of ascent. It is not likely to be less, and if it is greater there will be a certain margin of safety. It was found, on examination, that the greatest economy would result by each bottle started during ascent being used to the extent of two thirds of its contents, and then left behind for use on the descent. It would only be safe to adopt such a system if one could be absolutely certain that the stop valve on each bottle would be properly closed after having once been opened. Hence this method was ruled out.

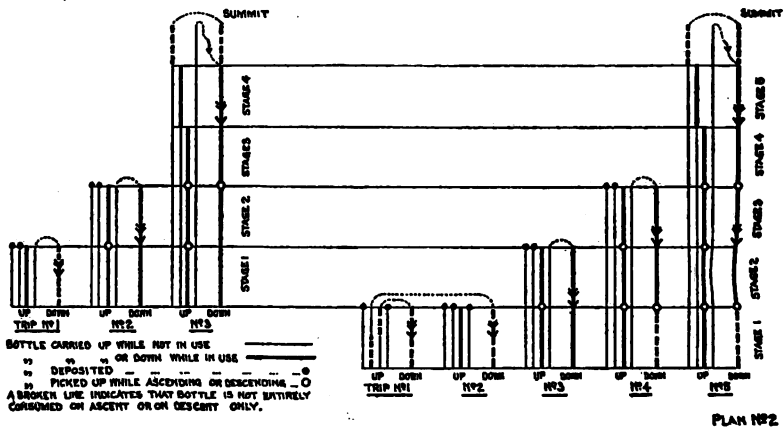
The final solution of the four bottle problem is due to Mr. J. D. C. Couper. The programme described here is that necessary for one man to reach the summit. For two men to do so it must be duplicated, and for three men triplicated, and so on. The climb is divided up into stages, which are not measured in definite heights at all. Each stage covers that height which can be ascended during the consumption of one bottle of oxygen on that particular part of the mountain on which it may happen to be located. If the summit can be reached in 7 hours from the North Col, provision would have to be made for four stages. If the climb takes 9 hours, it will be a five stage one, and so on. If bottles can only be laid out for a five stage scheme, and it is found that six stages will be

necessary, the mountain will not be climbed, if bottled oxygen is essential to attain success.

The programme is based on the principle that one bottle must be laid out at the top of each of the lower stages for each man to pick up on his way up, and at the top of every alternate lower stage for him to pick up on his way down, so that he may be able to replace emptied bottles by full ones. He starts from camp with four bottles in his carrier, and so will be able to start each of the lower stages with a full complement of full bottles. At the top depot he will have four charged bottles available for getting to the summit and back again to that depot.

Four and five stage schemes for four bottle loads are shown diagrammatically on plan No. 2. In each of these schemes there is a

MOUNT. EVEREST. EXPEDITION. LAY-OUT SCHEME FOR OXYGEN BOTTLES.
LOAD. 4 BOTTLES ASCENDING; 1 BOTTLE DESCENDING.



bottle available for a short additional ascent to and descent from the summit. It will be noticed that the four stage scheme is identical with the upper part of the five stage scheme. This must be so in every case, a shorter programme always being identical with the upper part of a longer one in which the same number of bottles are carried at one time.

In the diagram vertical lines are arranged in groups. All the lines, excepting the right-hand line of each group, represent one bottle being carried uphill. The right-hand line represents a bottle being carried downhill. A bottle being carried and used at the same time is represented by a thick line. If not being used at the time it is represented by a thin line. As only one bottle is being carried downhill at a time it will necessarily be in use. When a full bottle has to be dumped the fact is indicated by a dot; when it has to be picked up, by a circle. The brackets joining the tops of the lines merely indicate that a bottle that

has been carried uphill has to be carried down again. Thick broken lines indicate that a bottle is either only used continuously until it is half emptied, or that after having been half emptied its further use is recommenced.

The following verbal description of the four stage scheme for four bottle loads may help to make the meaning of the diagram clearer :

One man starts with four bottles, climbs one stage using one bottle in the process, dumps two bottles and returns using the fourth, having some oxygen still left in the bottle when he finishes.

One man starts with four bottles, ascends one stage using one bottle in the process, throws that bottle away at the top of the first stage, picks up one bottle from the dump, climbs another stage using one bottle in the process, dumps two bottles at the top of the second stage, and descends using the fourth bottle.

One man with four bottles uses one bottle at the first stage, throws it away at the top of that stage and picks up the remaining bottle from the dump ; climbs the second stage using another bottle, throws it away at the top of the second stage, picks up one of the bottles dumped there ; climbs the third stage and throws away the bottle he has used in doing so ; climbs the fourth stage, throws away the bottle he has used in doing so ; uses one bottle in getting from the top of the fourth stage to the summit, and descending again to the top of that stage ; uses his last bottle in descending stages four and three, picks up a bottle from the dump and uses that for the remainder of the descent.

The schemes, as at present formulated, provide for no additional bottles at the depots for use in case of emergency. It was felt that the necessary margin of safety could be more easily determined by the climbing party after they have gained some experience of the effect of oxygen at high altitudes when laying out the lower depots.

As comparatively little is known at present as to the efficiency of oxygen as a help in climbing, and as the continuous use of oxygen when once started must be carried on without intermission until return to camp, it was felt that every other suggested remedy for mountain sickness should be tried, and that provision should be made for its use, if found successful.

Sixteen of Professor Leonard Hill's Oxylithe bags and 200 lbs. of oxylithe have been sent out. The principle on which these bags work is as follows :

One fifth of a pound of oxylithe, which is sodium peroxide in cake form, is placed in a container communicating with the bottom of the bag, and $\frac{3}{4}$ of a pint of water or urine is added. Oxygen is given off from the mixture, and the residue is caustic soda. Alternatively, oxylithe need not be used, but the bag can be charged with 15 litres of oxygen from one

of the bottles, and a 5 or 10 per cent. solution of caustic soda poured into the bag. The climber then breathes into and from the bag for twenty minutes through the mouth, a clip being placed on the nose. Eighteen thermos flasks have been sent out for carrying the necessary water or caustic soda solution, both of which can be used over again for several charges, the rate of consumption of liquid being half a pint per three charges. The caustic soda in the bag absorbs any excess of carbonic acid from the exhaled breath. Professor Hill's objects are to avoid the continuous use of an artificial oxygen supply, and to provide an intermittent supply, not only of oxygen, but of carbonic acid as well. He considers that fatigue at high altitudes is brought about by the lack of carbonic acid in the system, the lack of oxygen causing the acid to be washed out. He recommends the use of the bags while at rest, not while climbing, as Dr. Kellas suggested in his report. These bags are usually made of such a size as to have a 15-litre capacity at n.t.p., but owing to the greater volume of 15 litres, n.t.p., of oxygen at high altitudes, those sent to India have been made of double this capacity. The bags have been sent out not only as a possible substitute for bottled oxygen, but also to furnish coolies with some sort of oxygen supply, the high-pressure breathing apparatus being too complicated for their use.

Professor Hill also suggested that morphia and bicarbonate of soda should be tried as remedies for mountain sickness. So 500 $\frac{1}{8}$ -grain Burroughs Wellcome & Co. morphia tablets and $\frac{1}{2}$ lb. of Collis Browne's chlorodyne and 2 lbs. of Howard's bicarbonate of soda tabloids have been sent out.

Mr. W. Harkness Young wrote to the Secretary of the R.G.S. that he had been cured of mountain sickness in the mountains of Bolivia, at 16,000 feet, the remedy being garlic, either breathed through the nose or taken as a flavouring to soup. As the Air Ministry, Professor Collie and Messrs. Siebe Gorman considered that the suggestion might prove to be useful, a dozen 2-ounce bottles of Boake Roberts' essence of garlic have been sent out.

The use of oxygen to compensate for low atmospheric pressure has been thoroughly investigated in vacuum chambers and while flying at high altitudes, but deductions made from information so obtained may not necessarily apply to the case of mountaineering, as allowances have to be made for the favourable effect of acclimitization and for the adverse conditions, due to hard exercise combined with wind and extremes of temperature, that can only be studied on an actual climbing expedition. Opinions are necessarily based largely on theoretical considerations at the present time, but it is expected that useful information of a practical nature will be obtainable, whether Everest be climbed or not. There is one important consideration upon which Professor Dreyer lays special

stress; a person suffering from want of oxygen is more susceptible to the effects of cold and wind than one having an adequate supply.

Medical opinion, in which experienced mountaineers like Dr. Longstaff and Dr. Wollaston concur, appears to be fairly unanimous that it will not be possible to climb Everest without oxygen, but that, given a sufficient supply of oxygen and the absence of technical mountaineering difficulties, the ascent should be of a fairly easy nature. As Dr. Longstaff has pointed out, if a liquid oxygen plant could be established in the vicinity of the mountain the problem would be solved.

The reason for this is as follows: The four bottles which can be stowed in the carrying frame described weigh 32 pounds gross, and only contain 960 litres of oxygen. Now liquid oxygen can be carried in a vacuum flask at a pressure not exceeding 5 or 6 pounds per square inch, and such a flask charged with sufficient liquid to produce 2,400 litres of oxygen, n.t.p., on evaporation would weigh 19 pounds. The carrying and breathing apparatus would probably not exceed 7 pounds. Thus the total load would be about 26 pounds for 2,400 litres, against 32 pounds for 960 litres of bottled oxygen, the quantity of oxygen carried being two and a half times as great, with 6 pounds less weight. Each man could start from camp with oxygen for 18 hours, and no question of valves freezing or other difficulties incidental to high pressure would arise.

The trouble with liquid oxygen stored at a manageable pressure is that it boils away at a rate varying from 6 to 12 per cent. per day, according to the size of the flask in which it is stored, the greater the amount of liquid the smaller the percentage loss, while the leakage of bottled oxygen should not exceed 10 per cent. per annum. If this year's expedition is not successful, some enthusiastic millionaire may yet provide a liquid oxygen generating plant near the mountain, which might reduce the ascent of Everest to a question of £ s. d.

In conclusion, it must not be forgotten that little is known as to the help oxygen may prove to be. To carry some hundredweights of apparatus and bottles, in addition to the essential equipment and food, to 23,000 feet may prove to be impracticable. Few parties have hitherto reached that height at all, and to do so they have camped at a lower level and travelled light. If the present expedition does not succeed, it is improbable that another will easily be got together so strong in medical and scientific knowledge as well as in climbing power.

Continuous oxygen breathing apparatus in its present state of development is not a thing that every one can use safely, and it would not have been sanctioned by the Everest Committee had they not known that there would be an adequate proportion of members of the party who have the experience necessary for exercising sound judgment as to the extent it will be wise to rely upon it and for thoroughly instructing the others in the

use of the apparatus. On the other hand, it could not be considered safe to dispense with it. Professor Dreyer states that the evil effects of lack of oxygen become more and more aggravated the longer that one is exposed to the deficiency. This means that time tends to lower the danger level, and so a strong party without oxygen might possibly manage to climb close up to their danger level and then be overcome by that level being lowered by the time effect before they have descended.

It is admitted that the ascent is not likely to be made without artificial aid to respiration, and this aid has been provided by the Committee under the best advice available and after very careful consideration of all the circumstances. They have not only provided the apparatus recommended by Professor Dreyer and Professor Leonard Hill, but as a final precaution Sir Walter Fletcher, K.B.E., F.R.S., the Secretary to the Medical Research Council, has been consulted, and he has expressed general approval of what has been done.

THE 1922 MOUNT EVEREST EXPEDITION.

The party is made up of:—

Brig.-Gen. the Hon. C. G. Bruce, C.B., M.V.O., in command.

Lt.-Col. E. L. Strutt, C.B.E., D.S.O., second in command.

Capt. T. G. Longstaff, M.D., etc., medical officer.

Mr. G. L. Mallory (leader of the 1921 reconnaissance).

Capt. George Finch, O.B.E., oxygen officer.

Major E. F. Norton, R.F.A., D.S.O.

Dr. A. W. Wakefield.

Mr. T. Howard Somervell, F.R.C.S.

Capt. J. B. L. Noel, photographic officer.

Mr. C. G. Crawford, I.C.S.

Capt. J. G. Bruce	} Indian Army.
Capt. C. J. Morris	

General Bruce reached India in February, and the whole expedition assembled in Darjeeling by March 22, and, with the exception of Capt. Finch and Mr. Crawford who remained to superintend the transport of the oxygen equipment, left on March 28 by rail to Kalimpong Road, thence *viâ* Kalimpong. Phari was reached on April 6, which is about two months earlier than last year.

General Bruce has secured the services of some young Gurkha N.C.O.'s. The stores for the expedition amount to about three hundred mule loads.

ROUGH WEATHER ON THE FINSTERAARHORN FIFTY YEARS AGO.

By D. W. ALLPORT.

SIX of us were sitting one August night in 1872 on some rocks at the top of the Oberaarjoch. The party consisted of two guides—Peter Baumann and Peter Rubi—a porter, and three innocents—a strong-limbed and stout-hearted Nonconformist minister, a young amateur mountaineer whom we called ‘Enthusiast,’¹ and the humble writer of this record. Close to us was a natural cave formed by a vast rock having fallen from somewhere or other upon other rocks. To say that a man might crawl in would by no means express the truth, as the only means of effecting an ingress was to lie down and then wriggle in after the manner of that humble creature which Dr. Watts was wont to look upon as the prototype of man. Just inside the entrance a marmot had his resting-place, and further in were some lumps of half-frozen mud and clods of wet turf, flung in by some previous sojourner. Baumann soon had a cheery fire blazing, round which we were glad to cower, for the night was growing cold. The waiting for supper or, indeed, for any meal, is not, as a rule, the most gleeful or pleasant occupation for hungry men, but on this occasion our interest in the preparation quite compensated us for the pangs of delay. Peter Baumann is almost as good a cook as he is a cragsman, and on this occasion his talents were in grand form. If there existed anything in the world’s provender market which our souls craved for more than another, that one thing was soup; and to our delectation Peter announced that in a short time soup we should have. He speedily placed a saucepan on the fire, propping it up with stones. He next produced from his knapsack a tin containing a brown compound, which he emptied into the pot, adding snow water; after that, salt, pepper, meat, eggs, bread, sugar and raisins were flung into the pot, as it appeared to us with beautiful impartiality, and all the while the Oberländer, with solemn gravity, stirred the compound round and round, while we watched his every movement with keen interest and anticipative delight. Presently he ventured to taste the work of his hands, but the expression

¹ The late Rev. John Pillans and the late G. W. Stevens, A.C.
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of infinite disgust which swept over his weather-worn face, and the vigour with which he repeated the words '*nicht gut, nicht gut,*' were by no means encouraging.

However, nothing daunted, he proceeded to add a variety of other ingredients, and on his making a second trial we were gratified to hear words which sounded like 'very mooch besser, very mooch besser,' proceed from his lips. Two cups were then produced, into which the soup was poured, and with the help of a piece of firewood we managed to transfer it speedily enough, with all its wonderful ingredients, into our mouths. Thus refreshed and re-invigorated, we were able to appreciate the better the glorious scene which lay unfolded all around us. The reflection of the setting sun still lingered on the tops of the distant mountains, while the valleys beneath us were shrouded in a profound gloom. The silence of evening brooded over everything, for the frost had frozen all things still. The monarchs of the Oberland towered above us, the Schreckhorn, the Finsteraarhorn, the Wetterhorn, were our near companions, while the 'Maiden,' the 'Ogre,' and the 'Monk' with a cowl of clouds about his head were very near at hand; and always where the setting sun cast its reflection there arose in awful splendour those twin brethren, 'peerless among their peers,' the 'Weisshorn' and the 'Matterhorn.' Slowly the daylight died. Slowly the giant forms of the mountains disappeared from view. Slowly the ice world around us became blurred and indistinct, darkness swept over the scene, and it was night.

Peter Rubi and the porter now joined us round the fire, and as the stars came out the three Oberland men struck up the patriotic songs of their Fatherland, and so the time passed merrily away. While Baumann had been cooking and we had been eating, Rubi and the porter had been busily engaged in gathering little tufts of dry grass or moss, and spreading it out on the floor of the cave, thus making a species of bed. This operation being completed we thought it time to retire for the night. The light of a candle showed us the way in, so, lying prone upon the ground, by means of a series of convulsive wriggles, we effected our ingress. Peter Rubi went in first, I followed, our young 'Enthusiast' next, then the clergyman, and Baumann brought up the rear. The roof was too near the floor to allow of anyone sitting upright, and the available space was about that of a four-post bed. Gradually the pile of humanity began to take an ordered shape. We fitted ourselves round each other; 'Enthusiast'

fitted himself round an angle of the cave, the parson fitted himself round an angle of 'Enthusiast,' I entwined myself as best I could around an angle of the parson, Baumann embraced me most cordially, and Rubi fixed the whole firmly together by wedging himself in between Baumann and the side of the cave, and thus in closer companionship than ever Yarmouth bloaters knew, we composed ourselves to woo the drowsy goddess. At 1.30 A.M., Rubi, by means of a strong physical effort, disentangled himself from the rest of us, and creeping out, began to make preparations for breakfast.

By 2.30 we had said good-bye to our porter, and were on the march for the Finsteraarhorn.

The morning was tolerably fair, although masses of cloud obscured the stars. It soon became necessary to rope, for the ascent was somewhat steep, and the hardness of the snow made a slip very probable; so much so, that for a considerable distance where we had to traverse the slopes, Rubi hewed out every step with his axe.

Presently there appeared on the mountain a cold grey light, which gradually stole down the sides, revealing to us the great white wastes below.

But it was only a gloomy dawn at the best, for by this time the sky was entirely covered with clouds, flakes of snow were beginning to fall, and the mists were gathering. We obtained one glimpse up the long savage arête which swings upwards to the summit of the Finsteraarhorn; and then the fog came sweeping down, enveloping us in a sea of gloom.

We had by this time attained an altitude of rather over twelve thousand feet. At 6.15 we halted and made as comfortable a meal as the falling snow and the arctic wind would allow. We decided to make a struggle at any rate to carry out our plan, so at 6.30, leaving baggage behind, and armed only with ice-axes, we started through the mist.

Rubi went first, we three amateurs next, Baumann last. I cannot give a very intelligible account of the next stage. All I know is that the snow fell faster, the wind blew colder, the ice-slope grew steeper and steeper, and the fog denser and more dense. Rubi worked like a Titan at step cutting; while we, clinging to our ice-axes, planted our feet as firmly as possible in the steps. Panting, shivering, gasping, we struggled on for about an hour and a half through the sleet and snow and the icy wind.

The fog covered everything, and through our spectacles even the white snow seemed to fall in dirty brown flakes.

About eight o'clock, however, we reached the final arête of knife-edged rocks, which rises in rugged irregularity to the very top, forming the chief climbing difficulty in the ascent. It was coated over in many places with ice, and on one side is a sheer precipice, the bottom of which the mist prevented our discovering; on the other is an ice-slope, so steep that a slip upon it would lead to as awkward consequences as a fall over the precipice. In tolerably fair weather, with proper care, the difficulties of this passage would not probably be very great; but the storm which was raging when we had the privilege of grappling with it made that knife-edge the reverse of comfortable.

Our hands and fingers were already half frost-bitten, but by dint of struggling, scrambling, and hauling we gradually lessened the distance between ourselves and the summit. The wind not only almost blew us bodily off the arête, but intensified to a wellnigh unbearable degree the deadliness of the cold. The snow as it fell seemed instantly to compact into solid ice, and our beards became as patriarchal as Jewish Rabbis', while our moustaches attached themselves by icicles to our chins. The rope grew into a cable of ice, over which the hands slid helplessly.

After spending about an hour upon the rocks in these *genial* circumstances, it became necessary to leave the top of the arête and make a detour of some seventy or eighty yards on to the ice-slope composed of perfectly hard, green ice, and so steep as to require the utmost care in passing it. We had left our axes behind at the base of the rocks, but, thanks to Baumann, that prince of step-cutters, we always obtained a firm foothold, and in course of half an hour succeeded in getting safely back to the arête.

For nearly another hour we held on through mist and snow, and wind and ice, till we almost began to despair; but a little after ten o'clock the final crag was gained, and a cheer hailed the fact. We stood upon the storm-scarred summit for some five minutes or so, with a prospect all round of about ten yards. Honest Peter Rubi, who had had his face cut by a falling stone, was perhaps an exception to the rule of absolute pallor, as the blood froze immediately on the ice of his beard, and thus presented the only vestige of colour in the dreary landscape.

After having inserted a card into a bottle, we commenced the descent. It will suffice to say that we safely reached the slopes of snow and ice at the foot of the arête.

A more bewildering scene than that which lay all around us surely man never gazed upon. A confused blur of snow and cloud, without a landmark of any sort or kind, nothing but a wintry waste in which the clouds mingled with the ground in such a way that it was difficult to discover what was solid substance and what was floating mist.

The best guide in Switzerland would have been helpless on such a day in such a place; and it soon became apparent that our two men had lost their reckoning. The slopes over which our party was passing were very steep; and once Baumann, who was leading, slipped on a stretch of pure ice. Our 'Enthusiast' was dragged violently from his foothold and sped away after him. Luckily at that moment the snow at the edge of the ice-slope broke away under me and I sank into a crevasse; while Peter Rubi and our clergyman stood firm and hauled away lustily so that the descent was stayed, and Baumann enabled to regain his feet.

We wandered about through the ever-falling snow in a state of blissful ignorance as to our whereabouts, looking vainly for the rocks on which we had deposited our knapsacks. At last, however, long after we had given up all hope, we stumbled upon the objects of our search. The weather, if possible, appeared to get worse, and the mist seemed to become denser and denser. In order to make the path to the Eggishorn, it was necessary to cross the glacier (which we knew must be immediately below us), and strike a small pass on the other side [Grünhornlücke].

It was, of course, highly probable that, in the utter absence of any landmark, we should miss the pass altogether; and this was, in fact, what actually happened. For four hours we wandered about over the glacier through the bewildering wastes of snow, entirely at fault; for about an hour and a half we thought we were on the right track, and mounted steadily upwards, only relieving the monotony of the tramp by breaking through into a concealed crevasse. But our hopes were rudely dispelled, for after ascending, it seemed, almost as high as the summit of the Finsteraarhorn our guides coolly turned round and went down as rapidly as possible in our almost obliterated tracks.

It was at this time that we began most vividly to contemplate the probability of having to pass the night on the glacier, a contingency somewhat disturbing to our serenity of mind. However, towards the end of the afternoon, through a momentary rift in the cloud, our 'Enthusiast'

thought he recognised a mountain known as the Rothhorn. He pointed it out to Baumann, who seemed to agree with him, and we steered accordingly; and presently, as we descended lower and lower, we emerged from the clouds and obtained a good glimpse of the glacier itself, which turned out to be the Viescher glacier. Baumann and Rubi now encouraged us by saying that they knew of a pass by which it might be possible after all to reach the Eggishorn that night. Sitting down upon the snow and refreshing ourselves as best we might from our now scanty larder, we discussed matters in a much more hopeful manner. There was, however, no time to lose, so as speedily as possible we scrambled over the rocks at the side of the glacier. It was a curious journey and the mode of progress most irregular, comprising jumping, sliding, crawling, walking, lowering with the rope, climbing, tumbling and stumbling.

About 6.30 P.M. we left the moraine and took to the glacier again. The ice was contorted into the most imposing crevasses imaginable, and our guides informed us that we must make a great effort to get clear of it before nightfall, so we had to go the next few miles at almost a run.

We got clear of the ice by 8 P.M., before the daylight quite died away, and to the foot of the pass over which lay our haven of refuge. We began to mount in the pitch darkness up the atrociously steep hill-side, over rocks flung about in wild confusion, with shrubs growing in between them. One moment you would carefully plant your feet on nothing in particular in mistake for solid ground; the next you would commit the opposite error and kick your shins energetically against a rock in mistake for empty air; then by way of variety you would plunge into a stream or roll over into a bush; then a stone would tip up as you trod on it, and down you and it would go together. If you lagged two yards behind the rest there was a danger of your getting lost altogether. This work continued for more than an hour and a half, and then we reached the snow once more. Our guides now informed us that we must be roped together again, as the way was going to be awkward. We could not help thinking that there must be a latent irony in the word 'going,' as though the way had not been the very embodiment of awkwardness for the last two hours or so. However, we submitted dumbly, like tired cattle, to have the noose once more adjusted in the grooves which constant hauling had almost worn in our bodies, and patiently waited to see

what we should see—not that we were likely to see much, for the darkness was intense. We were immediately under a mass of snow and by the side of a running stream of water, which Baumann informed us ran all the way to the Eggishorn; but as we had by no means attained to the summit of the pass, beyond which that much-desired resting-place was situated, we were at an entire loss to understand how, unless the water took to running straight uphill, it could possibly get there; but the mystery was speedily solved. After following the stream for a few yards we became conscious that it had abruptly turned a corner and disappeared from view, and the reason of the roping then became apparent. We were on the edge of a very steep slope, which fell away towards the glacier we had left; and above us another wall of rock stretched indefinitely into the darkness. By means of a narrow bank of earth on one side and the solid rock on the other, together with various wooden tubes and other rough engineering contrivances, the water had actually been conveyed, as Baumann had informed us, all the way to the Eggishorn. The narrow bank of earth was the only path we had to traverse; and as in the darkness it was almost impossible to tell the difference between earth, water, and air, our progress required a vast amount of caution, as a step into space would have been attended with unpleasant consequences. The dread of being jerked over the edge acted upon our nerves so strongly that we were constantly throwing ourselves into the stream to withstand the dreaded jerk. For another hour and a half we crept on in this gingerly fashion, although the wooden tubes through which the water rushed with impetuous force were especially awkward. These tubes were carried over vast chasms, and they bent and shook beneath our weight in a very suggestive manner.

About midnight the barking of dogs in the distance told us that the end of the journey was nigh, and shortly afterwards, drenched, weary, hungry, but rejoicing, we stood knocking at the hospitable portal. The good landlord himself and almost every servant connected with the establishment turned out to bid us welcome. Speedily an unlimited supply of dry clothes of every conceivable shape and size was placed at our disposal, and a hot supper spread upon the table. Thus happily, after twenty-two hours' hard work, ended our ascent and descent of the Finsteraarhorn in bad weather.

TWO REMARKABLE UNSCALED ROCKS IN SAVOY.

By LEGH S. POWELL.

I. *The Pierre Menta.*

ANYONE visiting the mountain slopes overlooking the Isère between Moutiers and Bourg St. Maurice, will soon find his eye attracted to a group of rocky summits to the S.W. of Chapieux on the opposite side of the valley. It is not their height which renders them conspicuous (not one reaches 10,000 ft.) but the steepness of the rocks and the boldness of outline. The Pierre Menta (2715 m., 8908 ft.), the most south-westerly summit of importance, is the most remarkable of the group. From whatever position it is observed on its E. and W. faces, it appears as an upright, roughly rectangular block of calcareous rock rising from the crest of a lofty ridge. Viewed from points along this ridge, both to the N. and S., the rock assumes a more slender shape, which is highly impressive. Its height above the ridge is given as about 60 m. in the 'Guide Joanne,' and on its W. face this figure is somewhat exceeded. Viewing it from any and every quarter the cragsman is met by very formidable problems. Inspected from the W., up the Treicol Valley, there seems to be a semblance of an arête of rather broken rock. Examined, however, at close quarters this gives little encouragement of reaching more than a quarter, at most, of the height of the obelisk, while, above, great slabs of rock literally overhang.

During the summer of 1920, when I frequently saw the Pierre Menta in the distance, I heard by common consent that the great rock had never been climbed. The reference in Ball's 'Western Alps,' 1898 edition, runs as follows (p. 216): '... The path to the Col de Bresson bears S.E. and mounts to the pass (1½ hr.) 2460 m., 8071 ft., some way to the N.E. of the Pierre Menta (2715 m., 8908 ft.), a remarkable tower of rock, easily accessible by its S. ridge.' Baedeker (1914 edition) also mentions the rock tower as an ascent to be made from Aime. The description in Joanne's 'Savoie,' (1912) p. 411, however reads (translated): 'Pierre Menta. This magnificent calcareous monolith, with perpendicular walls, rises vertically to about 60 m. from the crest of the ridge which dominates Aimé on the N., above the valleys of Treicol and Ormonte. The E. foot may easily be reached in 5½ hr. by the Chalets

de la Balme and some very steep grass slopes. It is one of those rare Alpine summits which has up to now defied all attempts to scale it; it seems to be very difficult if not impossible to conquer it by the ordinary means of ascent.'

In view of this conflicting information I decided to make an inspection of the rock tower at close quarters. This I accomplished on August 31, 1920, a day exceptionally fine and sunny. I found the rock fairly easily approachable on the S., W., and N. sides, but for its E. face, a companion and a rope would be desirable. I came to the conclusion that the local verdict that the rock has not been climbed is probably correct. From the N., or N.E., a cragsman would probably reach a higher altitude than from any other quarter, but, having gained the wall of rock seen to the left of Compton's photograph from the N.W., he would be faced by a huge unbroken surface, which, from certain positions, is seen actually to overhang.

I succeeded in interesting Canon W. C. Compton in my discovery of an unscaled rock summit, and he most kindly agreed to accompany me last summer to the district at such time as he could get away from his Chaplain's duties at Courmayeur. I made arrangements for a sojourn of several days in a mountain chalet in the valley of Treicol, where on August 16 Compton duly arrived. To our delight, after a period of broken weather when snow fell to low levels, the morning of August 17 broke clear and beautiful, and photographs were taken from an eminence (2580 m.) on the spur to the N.W. of the Pierre Menta, and from two or three positions along the crest of the ridge to the S. of it. On the following morning other photographs were taken from the N.E. in the neighbourhood of the Col de Bresson.

The result of this second visit confirms my surmise of the previous year, viz., that not only is there no easy means of access, but the probability is that no one has ever climbed the rock. Compton permits me to say that he is of the same opinion.

Since this second visit I have been able, by the kind help of certain members of the C.A.F., to learn more of the Pierre Menta. It appears that older editions of the 'Guide Joanne' pronounce it as accessible, and it was not until 1908 that the mistake was corrected. I am indebted to M. Maurice Paillon for the privilege of examining a number of the back issues of the guide book.

The first edition of Joanne's guide to 'Savoie' appeared in 1891, and it is here the mistake first occurs. This is a translation of the text: 'Pierre Menta (2715 m. N.; ascent recom-

mended). Pierre Menta is a magnificent monolith with perpendicular walls, at the base of which is debris of gigantic size forming fissures and openings of profound depth. The rocky tooth emerges vertically to 60 m. above the ridge which dominates Aime on the N. at the point where it joins with the valley of Treicol. We advise climbers to mount by Grenier and to descend over the Côte d'Aime.'

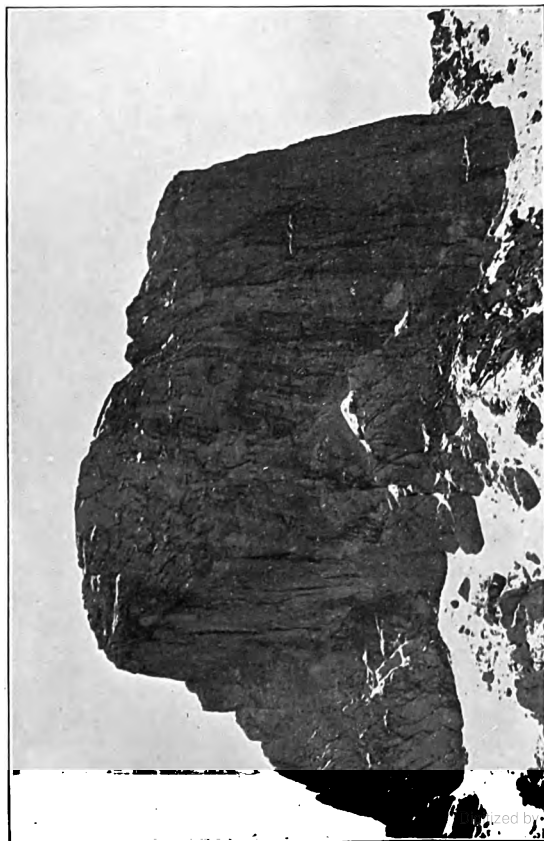
This description is repeated in the later editions, until in 1908, with M. Monmarche as editor, appears the first correction. After the description, on p. 411, which is little altered, there follows (translated): 'This summit, considered as inaccessible, has never been climbed according to the report of chamois hunters of the country.' It is obvious now whence the errors in Ball and Baedeker originated.

M. Paillon has also called my attention to the issue of 'La Montagne' (of which publication he is editor-in-chief) for September 20, 1911. This contains a photograph of the Pierre Menta taken in July in 1910 from the Col de Bresson. In an accompanying note it is described as a virgin point and difficult to climb by ordinary means. 'It would be regrettable to overcome it by mechanical aids. This is the opinion of the numerous experienced Alpinists who have closely examined it.'

Le Commandant E. Gaillard, the author of 'Les Alpes de Savoie' (Climbers' Guide) very kindly permits me to state that between 1904 and 1908 he made five unsuccessful attempts to scale the rock. Of these four were made by different routes, three by the E. face and one by the W., from the side facing the 'Coin.' These attempts enabled him to reach to a fair height but not to gain the summit. It is from the last-named direction that he considers success most probable.

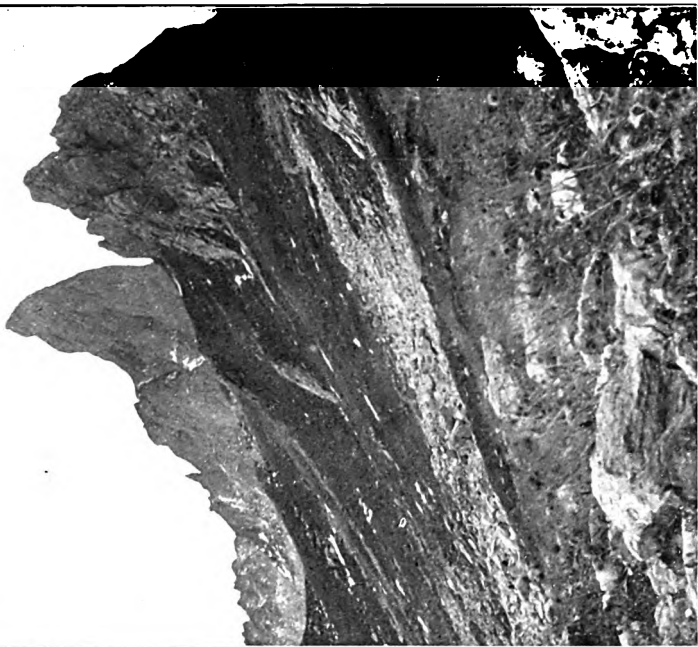
As regards the height of 60 m. from the ridge I cannot help feeling certain this is appreciably under-estimated, but I have taken no steps to verify my impression.

Before bidding adieu to the Pierre Menta I think it will be of interest to give a few particulars of the little visited region and chain of summits which extends from the Aiguille de Terrassin, above Chapieux, to the Mirantin, above Albertville. Its course is at first to the S.W., but from the Cormet d'Arêches it gradually bends round to the N., thus forming what is roughly a semicircle. The road through the beautiful, forest-clad ravine above Beaufort and the path beyond over the level-topped Cormet de Roselend may be regarded as the diameter across the imaginary semicircle, with the valley of Treicol as its centre. The outer radiating spurs of the chain dominate the Isère on its course from Bourg St. Maurice to Moutiers



Photos W. C. Compton.

From N.W. (Pt. 2,580).



From N.E. (near Pt. 2,520).

PIERRE MENTA

and on round to Albertville. Right up the valley of Treicol is the Col de Bresson with the Pierre Menta a little to the S. of it. In the way of rock scenery this is the most attractive of the passes which lead to the Isère valley. The rocks of the Aiguille du Grand Fond form a striking feature on the ascent, whilst on the E. side of the pass those of the Rognais group also attract notice. The Col du Coin is gained by following a branch of the Treicol Valley to the S.W., and the path joins that over the Cormet d'Arèches. These passes, which lead to Aime, are each accurately described in Ball's guide, but no mention is made of the easy Col de la Nova, farther N., which leads from Chapieux through the wild Combe de la Neuve, to join, on the E. side, the route of the Col de Bresson. Many pedestrians visit Chapieux, and it should suit some of these who may be bound, say, for Moutiers, to cross to Aime by this direct and interesting way. Those bound for Bourg have an alternative to the carriage road down the valley by traversing the Passage de la Combe Neuve, which gives access to the secluded Charbonnet glen. Anyone who may select this route (and they will be few, for it is not found in any guide book) will do well to make for the dip in the steep rocky wall below the summit of La Terrasse in preference to the yet lower dip farther along the same wall. The rocks look somewhat formidable, but an easy track up them will be found.

W. and N.W. of the Cormet d'Arèches are the Col de la Louze and the Col de la Bathie, on either side of the Grand Mont. They are easy grass passes which figure in Ball and other guide books. But the Grand Mont (2698 m.) is not mentioned by either Ball or Baedeker, and it is a most admirable view-point for a survey of the whole country round. It dominates every other summit in the near vicinity, and the eye reaches over a very wide expanse of mountains. I cannot but think it has few rivals in this part, the celebrated Mont Jovet not excepted. The mountain, which is easily ascended from Arèches (where there is an attractive little hotel), is not without interest mineralogically. The rock, which is mainly gneiss, is exceptionally rich in rock crystal, some of it of good quality. It also contains copper ore in the form of carbonate and of pyrites and, I am told, argentiferous galena, though this latter I did not find.

II. *The Monolith of Sardières.*

This is another little known natural object which has certain remarkable features. It is not a great rock perched on the

top of a lofty ridge, like the *Pierre Menta*, but is a slender rock needle, reputed to be no less than 92 m. high, and is hidden away, like the *Dent de Satarma* at *Arolla*, in a delightful pine wood with a number of other rocks of fantastic shape in its vicinity. *Sardières* is a tiny, isolated village in the valley of the *Arc*, quite off the beaten track at the foot of a buttress of the *Dent Parrachée*. The village is situated above the right bank of the river between *Bramans* and *Termignon* (at each of which there are small hotels), and the monolith is an easy half-hour's stroll from *Sardières*. This needle is not mentioned by any guide book that I have come across, neither is *Sardières*, and except for certain picture post-cards displayed in shops at *Modane*, its security in oblivion from even the mountain-loving world has been well preserved. It is true that *Ball* on p. 244 refers to the tendency of the rock in this district to form monoliths, and special attention is called to a group at *Chavières*, on the route from *Entre Deux Eaux* and *Termignon*. These I have seen and they are unquestionably striking, but no one of them will compare in height and significance with the singular spike to which I am calling attention. Viewed in close proximity it is a highly impressive, not to say unique, object and it well deserves greater notoriety than it at present possesses. Visitors to the valley of the *Arc* will be repaid by a pause on their journey to inspect it.

The monolith stands on rising uneven ground with a base which is roughly elliptical. It took me three minutes to walk round it, and the number of my paces was 165. Its height is not properly realised except when viewed from a distance, and owing to trees a good view is limited to a few places. From certain positions it appears very pointed, but from others the top is rather blunt. From every quarter it is impressively vertical and above a certain height the rock becomes round, slender and tapering. Seen from below, on the S. side, the upper portion leans over somewhat ominously, but from every other view it is very erect. The material of which the rock is composed is a calcareous conglomerate of angular and mostly small fragments, which are bound by a particularly firm, dense and impervious cement. Pieces of the rock treated with cold dilute hydrochloric acid dissolve almost completely with evolution of carbonic acid gas, leaving merely a small quantity of an insoluble powder and no silicious stones or material of any size. At the foot of the rock on the S. there is a considerable natural cave which is sufficiently deep for it to become quite dark inside where the cave enlarges and rises in height.

ON POINTS OF VIEW.

BY BENSON LAWFORD

THE persistence with which politicians of a certain type, as well as most journalists, constantly advocate their own point of view as a panacea for all evil, will serve to illustrate the danger of adhesion to any exclusiveness in this particular line; though it must be admitted that the mental agility shown by these people in shifting their ground, when it is no longer convenient to hold the original doctrine, should endear them to those who, like the members of the Alpine Club, find their greatest recreation in going up one way and coming down another.

I suppose every member of the Club will have his pet point of view, which will vary inversely with the *avoidsupois* of the owner from, shall we say, Couttet's garden to the summit of the Charmoz—and for my own part, I must confess to a great affection for the Dents du Midi. This hackneyed subject for the lid of the chocolate box (as Leslie Stephen would have said) forms, in my humble opinion, an admirable belvedere. Being detached, as it were, from the main mass of the Western Pennines, the eye is led by an easy gradation through Mt. Ruan, the Tour Sallières, and the Buet, which form a fine foreground, up to the range of Mt. Blanc, with the monarch himself standing head and shoulders above his satellites: that is one of the advantages of the Dents du Midi—you are sufficiently far away to appreciate to the full the colossal grandeur of Mt. Blanc. To the W. the Lake of Geneva seems to be spread out at your feet, melting into blue distance, with the purple ridges of the Jura on the far horizon. Eastward, you have the Alps of the Valais, prominent among these being the beautiful snowy mass of the Grand Combin; and then to the N., across the deep-cut trench of the Rhone Valley, the whole loveliness of the Oberland, from the Diablerets over against us, through the many-crested Blümlis Alp, to the shapely Jungfrau, the Finsteraarhorn, and the fine pyramid of the Bietschhorn.

I had had a nodding acquaintance with my mountain from a very early date, as, while I was still a schoolboy in my early teens, I spent two summer holidays at Comballaz, above

Sepey, in the days before the carriage road across the Col de Pillon, at the head of the Ormonts Valley, had been opened. If my memory serves me rightly, we used to see the Dents du Midi, rather foreshortened, with the acute angle of the Cime de l'Est prominent, from the inn itself, or at all events from any of the hillsides round about ; and though, in those days, I was more taken up with the pursuit of butterflies than of hill-climbing—and which of the two is the more fascinating or elusive, I have yet to discover—I was sufficiently imbued with *cacoethes scandendi* to acquire at least the names of the mountains I saw. A good many years later I spent another two summers in the beautiful Ormonts Valley, where I enjoyed many a ramble and scramble on the surrounding hills, from most of which the Dents du Midi form an engaging feature of the foreground, noticeably so from the Chamosaire, the terminating western point of the ridge that bounds the Ormonts Valley on the S. This hill, which is an easy and beautiful walk of three to four hours from Les Plans des Isles (a bridle path, indeed, goes to within half an hour of the summit), overhangs the ravine of la Grande Eau ; and for its height (some 6000 ft.) and accessibility commands an astonishingly fine view.

It was, then, after having worshipped the adored with sufficiently distant reverence, that I prepared to come to closer quarters ; and with that end in view found myself walking up the attractive Val d'Illeiez one hot Sunday afternoon in July, more than twenty years ago. The chestnuts and walnuts on the lower slopes ; the fuchsias, roses, and scarlet geraniums in the gardens and windows of the sienna-brown chalets ; the foaming stream in the valley bottom, refreshed eyes and senses weary from the hot pavements and bustle of the City.

In those old, forgotten, far-off days, Champéry was still comparatively unsophisticated, and largely given over to French and Swiss families ; there were few English, and fewer climbers ; and an ascent of the Dent du Midi, without either sleeping out or the aid of local talent, was considered quite an adventure. If my memory serves me, we left the inn about 4 and reached the summit at 11.

It was a lovely walk the whole way, even to the last half-hour, which may bring you to a troublesome slope of loose stones, but gave us, on this occasion, an easy snow-bed. I had two boys with me, whose first mountain it was, and we all thoroughly enjoyed ourselves, especially when we saw

the smoke from the mortar, with which the hotel-keeper at Champéry (almost at our feet) celebrated our arrival on the Haute Cime; and when, several seconds after, the report reverberated among the hills.

Two years later, two of the three varied the ascent by going up direct from Anthémoz; and being in those days still sufficiently young and foolish, we raced down to join the midday table d'hôte. There was a nice old retired gunner colonel staying at our inn, who was so far impressed with our narrative as to attempt the ascent on his own account a few days afterwards. And I well remember the old gentleman's indignation at the fact that an officer of H.M.'s army had had to be towed to the top by 'a damned peasant, sir!' as he stigmatised the efficient and very handsome local guide.

Yet another ascent of the Dents du Midi stands to my credit, this time of the Cime de l'Est, whose rugged precipices tower so finely above St. Maurice; but of the view I can say little, as from the summit there was naught to be seen but fog and falling snow—as Maurice Decaillet, my guide on that occasion, remarked: 'C'est de la soupe et marmalade.'

It may perhaps be argued that, on the strength of a paltry three ascents, I am not entitled to claim any intimate acquaintance with the mountain, especially when there are certain misguided persons (and wild horses shall not drag their names from my lips, for are they not set out in full in Mr. Coolidge's 'Ball's Western Alps'?) who have been known to delight in scaling all the nine summits of the Dents du Midi in a single day; while others, like M. de Breugel-Douglas, whose fine monograph is in the Club Library, have devoted a lifetime to the subject. Yet I am inclined to doubt if even these enthusiasts can have experienced a keener joy than was mine on that first ascent of which I have already spoken. It must, however, be clearly understood that I am solely urging the claims of the Dents du Midi to rank as a point of view of the first order, and that I am in no way concerned with its merits as a climb—of which, to be strictly accurate, the Haute Cime has, technically speaking, none.

To my mind, one of the most impressive features of the mountain is the fine basin of the Salanfe alp, with the bastions of the Dents du Midi on the one hand, and the precipitous northern slopes of the Tour Sallières on the other.

Readers of Eugène Rambert's 'Ascensions et Flâneries' will remember his charming description of the Salanfe basin, and how he pictures the gradual evolution of the alp from the glacial epoch. He continues: 'It has gazed upon the past. If, towards the end of June, before the herds arrive, you walk at evening on the wonderful turf, hitherto untouched, while twilight prevents you from seeing the chalets, and you can hear nothing but the murmur of innumerable streams, that, hurtling down through the ages, pursue their eternal labours on the farther side of the moraine, you can imagine yourself transported to that period of time when the plain, first rising above the waters, was adorned with its primeval verdure; and the silence of the alp is as that intense quiet, which preceded the coming of man upon earth.'

Perhaps I have now said enough to rouse fresh interest in the glances which may be thrown at the Dents du Midi when next you cross the Lake of Geneva by boat, or round the head of it by train; but I have taken this particular mountain as the chief *motif* of my theme, as much out of the sheer affection I have for what an old guide of mine contemptuously called 'ein Kuhberg,' as to bear witness, with all the energy that in me lies, against the heresy recently advanced, within the walls of the Club, that a certain mountain was 'worth climbing, *if only* for the view'!

CLIMBING AND LONGEVITY.

By W. W. NAISMITH.

NOTWITHSTANDING an ill-informed popular notion that mountaineering is dangerous, most Alpine Clubmen are probably convinced that their favourite pastime is conducive not only to health and happiness but also to long life.

Evidence in support of this conviction may be welcome, and the lists of Alpine Club members who died during the three years since the armistice—1919, 1920, and 1921—supply some information on the subject.

They record 50 deaths of members, who lived no less than 35½ years each on an average after joining the Club, or 1782 years of aggregate membership. I exclude a member killed on active service in 1919, but include one who perished in the Himalaya 10 years after his election.

At what age did the 50 deceased members join the Alpine Club ? The obituary notices in the Journal state the ages in the case of 16 members, and if we isolate these from the rest, we find that they joined the Club at an average age of 37, and lived 32 years afterwards. As the Institute of Actuaries (Healthy Male) Mortality Table gives only 29·6 years of expectation of life to a man of 37, there was an average gain of about $3\frac{1}{2}$ years on each of these 16 lives.

Taking the whole 50 members, however, it is clear that, with an increased average survivorship of $2\frac{1}{2}$ years over the above 16 members, we are warranted in assuming a somewhat younger age at entry for the others ; and so we shall likely not be far wrong in taking 35 as the average age of entry for all our deceased comrades. Now, the expectation of life of a man of 35 by the h.m. table is exactly 31 years, so that there has been apparently an average *saving* of $4\frac{1}{2}$ years on the individual life, or about 232 years of usefulness (let us hope) on the whole 50 lives.

It would, of course, be wrong to say that when anyone is admitted to the Alpine Club he adds $4\frac{1}{2}$ years to his life, but at any rate the conclusion is justified that mountain climbing, begun in youth and continued up to and even sometimes beyond middle-age, is an exceptionally healthy pursuit, and one that, humanly speaking, tends to longevity.

Some Insurance Companies discourage proposals for accident insurance from mountaineering devotees, but the above figures, so far as they go, seem to establish the fact that Alpine Clubmen are specially good subjects for life assurance, although distinctly hazardous risks as annuitants !

The Scottish Mountaineering Club has not existed long enough to furnish any mortality experience of value, but one circumstance is worth mentioning in that connection. In 1904 a commutation scheme for life membership, based on the general expectation of life, was started and largely taken advantage of. The next 10 years proved the life members to be so unreasonably tenacious of their club privileges, that not a single death had occurred among them ! The result was that, in order to prevent the threatened exhaustion of the commutation fund, it was found necessary to revise the scale of future payments.

THE NORTH-EAST FACE OF FINSTERAARHORN.

BY G. HASLER.

(Read before the Alpine Club, December 12, 1921.)

THAT well-worn phrase, 'one of the last great problems of the Alps,' has done duty for a number of years, is still going strong, and will continue to do so, less the word Alps, as long as any mountain in any part of the globe has an unexplored side, ridge or gully. A phrase appealing specially to those in the first flush of youthful endeavour, its fascination grows less when one reaches demure middle age, but even then there is a speculative charm about it. Look to the future and the world's our oyster; to the past, and the vista is also intriguing. I have often wondered what the first recorded mountaineering problem was, but it never occurred to me till the other day that when the Ark grounded on Ararat and Noah found himself—with his Zoo—faced with an unknown descent, that that must have been some problem! Perhaps it was the consequent nerve strain caused by extemporising the first steps in the technique of descent that accounted for the distressing habits which he developed in later life.

The aforesaid phrase has a lot to answer for. Once label a mountain by it and its doom is sealed. For instance, about seventy years ago that greatest authority of his day, Gottlieb Studer of Berne, categorically asserted that the Gross Lohhorn was 'unclimbable.' I do not think that he lived to see this genial little peak go the way of all mountains, but nowadays on any fine Sunday morning in summer it resembles nothing so much as a giant ant-heap, climbers by the score swarming all over it. 'Tis but a short step from inaccessibility to popularity, and, generally speaking, the greater the reputation some route has for a certain initial coyness, the more certainly will it eventually draw full houses.

By this time you will be thinking 'Isn't this beggar supposed to be reading a paper on the N.E. face of Finsteraarhorn?' So I am, but the face itself is so abrupt that I don't like to approach it with abruptness; besides between the time when I first looked on this face as a problem, and to-day when the only reason for reading a paper on a seventeen-year-old route

is that it has not yet achieved popularity, there arises a mist of regrets for the changes that time has wrought, for faces that I miss in the mountains, for climbs left undone—regrets too that as the years pass enthusiasm takes on a paler shade, and that one never realizes till too late that

‘Time y-lost cannot recovered be.’

And this reminds me that the introductory part of this paper has lasted long enough. So we will now ‘cut the cackle and come to the ‘osses.’

If one considers the easy slopes and final ridge of the S.W. side of Finsteraarhorn up which the first ascent was made by Hugi’s people—he himself remaining in the Hugiſattel, from which place his successful guides had to carry him the better part of the way down to the Grimsel, for he had sprained an ankle some weeks beforehand—it seems strange that the first attempt of all on the mountain should have been made from the other side. For the N.E. wall of the S.E. ridge is far from inviting, and one must say that Herr Rudolf Meyer, who chose this approach to the mountain, had enterprise. Whatever we, as unbiassed sifters of evidence, may think of the 1812 controversy, I think we can agree to look on him as a god-father to the peak. It is an unfortunate controversy anyhow, inasmuch as it originated in a certain tenderness amongst his contemporaries, and has had judgment pronounced on it by many people who have never been on the ridge, and who are consequently not entirely qualified to judge.

In the accompanying photograph, No. I, the steep slopes by which Meyer and his companions reached the S.E. ridge from the Studerfirn in 1812 can be well seen. Close to Meyer’s wall which is half hidden by Studerhorn, is the Ober Studerjoch with its abrupt drop to the Finsteraarfirn. Continuing up from the Joch is a rib which soon flattens out into the face of the mountain, which has been miscalled the ‘East (or east-south-east) arête of Finsteraarhorn.’ As far as I know, the mountain has never been tried along that line, and I may say that Captain Farrar in his convincing study of the history of the S.E. ridge describes it as ‘a hopeless rock face, scored by shallow gullies . . . unsafe to climb and very exposed.’ To the right of this mythical arête is the great wall which forms the subject of this paper, and again to the right is the slope by which our party made the first direct ascent to the Hugiſattel. Beyond it is that useful, but stony, means of access to the mountain—the Agassizjoch.

There is not much history attached to the direct ascent of the N.E. face of Finsteraarhorn as yet. Studer mentions that he considered the face accessible, but there is no record that he tried conclusions with it personally. Dr. Häberlin with the Weissenfluhs had a look at it in 1870 and 1872, but they are reported not to have got so far as the Finsteraarfirn one time, and to have achieved nothing the other. Dr. Emil Burekhardt of Bâle in 1871 and 1875 was turned back by stone-falls at the foot of the wall, and a 'thunderstorm that burst on the Finsteraarjoch and prevented further work.' It is probable that these climbers meant to attack the Hugikehle, not the direct wall to the summit, but they never got near enough to be sure of their intentions. In 1897 guideless members of the Section Pilatus of the S.A.C. tried the 'north wall'—I am not sure what they mean by that—and reported it hopeless. At this point the record of people who looked and passed by on the other side ends, and for a time nothing more was heard about the face. On July 31, 1902, came the first real attempt by Miss Gertrude Lowthian Bell, with the brothers Fuhrer of Innertkirchen, who made a most gallant and determined attack on it. Their attempt, and even more their subsequent retreat, was a remarkable piece of endurance. For they not only had the natural difficulties of unknown ground to contend against, but when high on the wall a serious weatherbreak took place. Finding it impossible to go on Ulrich Fuhrer wisely got his party to a place about 100 feet below the Grey Tower—of which more later—where he could fix a rope, and where they crouched all night against the rocks with practically no shelter in horrible weather, until it became light enough to start down. The difficult rocks were in bad condition, snow was still falling, and they had to pass another night when they reached the glacier. Retreat under such conditions, and retreating safely, was a tremendous performance which does great credit to all, whilst Ulrich Fuhrer as last man down deserves special mention.

On July 7, 1904, Fritz Amatter and I went to the Schwarzegg Hut. We wanted to have a look at things, and at the same time hoped to turn the Hugisattel into a pass. We left Schwarzegg early, waited on the Finsteraarjoch for dawn, and at 4 A.M. on July 8 struck up a steep slope of hard snow which soon turned into ice. Higher up there were glazed rocks and a good deal of step-cutting at a steep angle, but no serious difficulties. The Hugisattel was reached at 12.45 P.M. Its conversion into a pass has little to recommend it; there is no

place on the wall which is quite safe from falling stones, and the climbing is of little interest. I do not think it has been repeated and, quite frankly, it doesn't deserve to be. It gave us, however, some insight into the expedition which we had in mind.

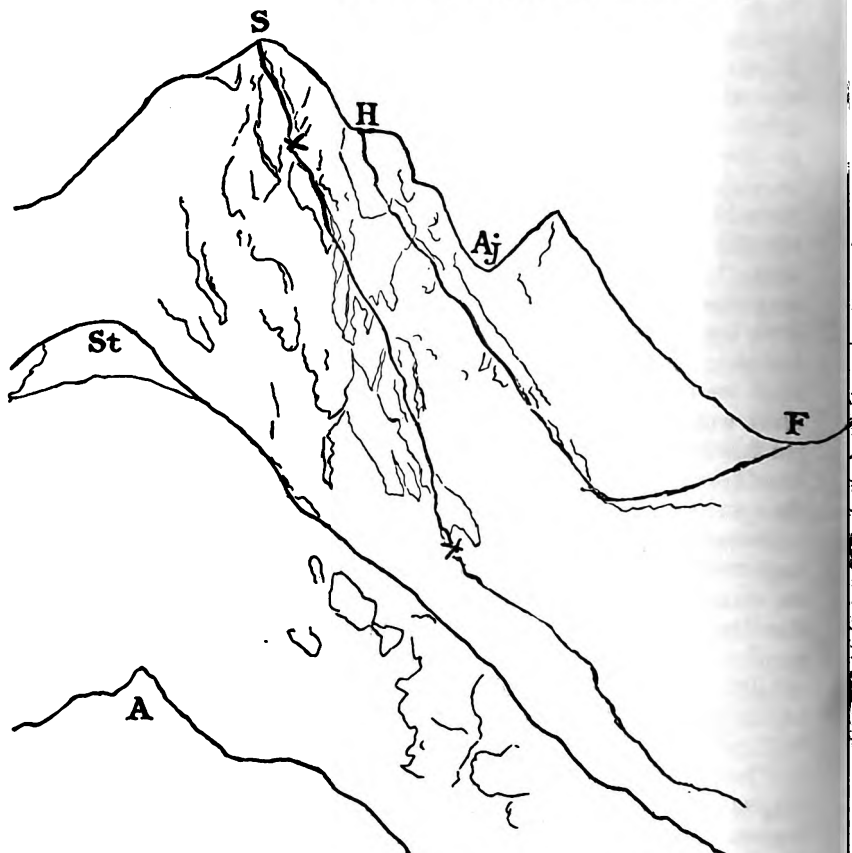
After reaching the saddle we went to the summit of Finsteraarhorn and back, and then down the ordinary route via the Gemsücke and Oberaarjoch towards the Grimsel. Whilst on the Studerfirn we spent a good deal of time looking at the upper part of the N.E. face, so that when we ought to have been approaching the Grimsel it was pitch dark. Possibly we were sleepy, for we had been walking practically all the previous night. Presently we found that there was something unfamiliar about our surroundings. Whichever way we turned a wilderness of great boulders seemed to be growing out of the ground before us. Amatter said we were keeping too high: I suggested, for want of something to say, that we might be keeping too low. One thing was certain and that was that we were no longer on the track. So we wasted no further time: each selected a convenient place between the boulders and settled down. So ended our perfect day. Early dawn showed us the Grimsel a stone's throw off.

Amatter was only just entering on his guide's career, and I was under the belief that I had written a 'Climbers' Guide' or so, so up to now we kept our divergence from the strait path a deadly secret. But Amatter has been one of the really great guides of his day for too long to mind a story against himself, whilst I never did. Besides, I have found that there were more important things coming to me in life than writing 'Climbers' Guides,' so I don't mind giving the lapse away.

The Hugiattel disposed of, we were ready for a nearer acquaintance with the N.E. face of Finsteraarhorn. The well-known photograph by Wehrli, here reproduced, gives a good idea of it, and the sprinkling of fresh snow brings out the detail well. It is taken from Oberaarhorn, with Studerhorn in the foreground, partly obscuring the Ober Studerjoch, and with its help I will now give you an outline of the route which we followed on the face. Though a certain great authority is of the opinion that I have not the gift of clear exposition, I have, thank goodness, always been able to see what I was doing; so I can at least show you the exact spot where we started the climb on the face, the exact place where we ended it, and I think I can manage some details in between.

On the Wehrli picture there is a long buttress starting on the

Finsteraarhorn in a split foot, which looks something like a lobster's claw. This buttress runs in an almost straight line to within a short distance of the summit. The left branch of the split foot is the point at which we started the climb up the



S = Summit.
St = Studerhorn.
A = Altmann.

Lower X = Bivouac.
Upper X = Grey Tower.
F = Finsteraarjoch.

H = Hugisattel.
Aj = Agassizjoch.

buttress, which, when seen in a photograph or from a distance, gives an impression of a continuous pronounced rib. Once at grips with it, however, you find something quite different. A super-Cyclops laying about him in blind fury couldn't have broken up its continuity more. From being a buttress it will suddenly almost merge into the face and turn into a series of titanic steps. When this happens a line of slabs and shallow



Photo P. Moutanlon.

FINSTERAARHORN

from Abschwung.



Photo V. A. Fynn.

OBER STUDERJOCH AND THE BIVOUAC.

From Finsteraarjoch.

gullies is the obvious way up the abnormally steep step ahead of you. You work up those slabs until the buttress emerges from the face again. This occurs many times, whilst the higher you get the more steadily the difficulties increase. The great thing is to stick to as straight a line upwards as possible; the less looking about for an easier route you do, the less time you will waste, for there isn't one, and economy of time counts for much on this wall. There is only one marked deviation from the straight line up the buttress, which occurs at about the height of the Hugi-sattel. Here there is an obstacle which, when seen from afar, looks like a great grey tower; in actual fact it is the buttress forming a precipitous step of some sixty or seventy feet. This step is turned on its left by a descent of some 45 feet, which enables one to reach a line of slabs which lead up again. The buttress, now ill-defined, is then regained, and you take a straight line up it, although from this point to the place where it ends near the summit it forms a series of enormously steep steps. The rocks here are very difficult, but safe from falling stones. Where this sketchy buttress finally merges into the face all your troubles cease, and the last few minutes you can go as you please, reaching the summit ridge a few yards to the left of the S. summit. Over the ridge to the top only takes three or four minutes more.

On July 15, 1904, Amatter and I left the Grimsel early, stopped at the Pavillon Dollfus till 3.30 p.m., and then strolled up the Unteraar and Finsteraar glaciers, a magnificent view of our wall in front of us all the way. It was one of those blue-skied, cloudless days with a blazing sun overhead which, owing to the labour of propelling one's weight plus a heavy rucksack uphill, does not appeal to one too much at the time. But days like that have a way of haunting one's memory afterwards. On a dark foggy winter morning in town they slip between one and one's work as a vision of blissful desirability; they plague one with the longing to be back at such another place under such another sky and sun. They are the mirage of all days in the High Alps as yet to be, and obscure the memory of all those others when conditions were by no means so ideal. On that particular brilliant day the Unteraar glacier was clear of snow, hundreds of streamlets overflowed their runnels, swept across the bare ice, splashed into little crevasses. It was more like wading along a river-bed than a glacier walk, and we reached the steeper slopes of the Finsteraar glacier with water-logged boots. As we went on the shadows lengthened, the blue faded out of the sky, the

distant peaks in the east flushed and paled, stars began to show faintly overhead. From the Finsteraarfirn we struck up to the left branch of the split foot before mentioned, went a short distance up its rocks, and at 9.30 reached a place where we could bivouac just as it was getting dark. As the little bergschrund at the foot of the rocks is marked on the Siegfried map on the 3800 metre curve, we had a wall of approximately one thousand metres, or well over 3000 feet, to climb from this place. The bivouac was a precarious ledge with just enough room for the two of us and our rucksacks. Our chief occupation through the night was making tea, and whenever we needed water I had to let Amatter down on the rope to a patch of snow below. We had limited our baggage to the scantiest proportions compatible with safety. A diminutive spirit lamp was our only camping luxury; food might almost have been carried in our coat pockets. The chief weight was made up by two one-hundred-foot ropes and various odds and ends without which no long new climb can be safely undertaken. We did not carry crampons or scarpetti: neither would have been any use. There were innumerable steep gullies to be crossed and recrossed, which were, and I think always will be, more or less snow-filled. The firm edge of the boot was, to my taste anyway, preferable on the type of rock which it turned out we had to climb. We did not carry a camera: it would have been impossible to get any photographs of value of the actual rocks climbed, for you are always too close to them. But reduced as our baggage was, it proved an unmitigated nuisance the next day.

Our surroundings were impressive to the last degree. Our perch looking down on to the glacier, the still warm night—its dead silence only broken by our voices and just once or twice by the crash of ice falling from the hanging glacier on Ober Studerjoch—all combined to make us feel what puny earthworms we were. There was something weird about the place which was not lessened by the ceaseless flickering of summer lightning, which lit up the mountains with the brilliancy of day. One moment we would be looking out into darkness: the next, the jagged lines of the eastern peaks would spring up hard and black against the quivering blue glare that filled the sky. It was a magnificent sight, but what gift lay in the hands of the Clerk of the Weather for us on the morrow we could not guess. Soon after midnight the lightning display left off, and clear starlit skies reassured us.

Towards daybreak we made tea for the last time, packed up,

and at 3.30 A.M. on July 16 left the bivouac. I led, at first over easy and then up rocks of moderate but slowly increasing difficulty, and we gained height at a good rate. At this stage all there is to be said about the climb is that its general characteristics were present; combined slab and gully pitches had already appeared, whilst from no point on the face was it possible to see more than a short distance ahead.

At 7.45, having reached the height of the Studerhorn (8637 m.), we rested for half an hour. I busied myself part of the time tying up the two sacks and axes, turning them into a dummy third. I guess that most of us have met the type of climber commonly referred to as 'luggage.' But none of us has ever seen one in tow that gave quite so much trouble as our dummy did. There were places where I couldn't help thinking of the famous 'Ziehet, ziehet, hebt!' story, only our inanimate mountaineer very often wouldn't respond to the rope, got hopelessly stuck, had to be hauled down and hoisted afresh, humoured and coaxed, until he made such a confounded nuisance of himself that both Amatter and I had serious thoughts of cutting him loose and letting him go wherever he chose.

Amatter then started negotiating one of the slabby bits and soon got out of sight; from this point he led right through to the summit over steadily increasing difficulties. Soon he reached the end of his tether and proceeded to haul up 'Dummy' for the first time. I followed, little knowing how we should both come to loathe the inanimate brute dangling ahead of me. When I reached this point of vantage I was a bit startled to see how little vantage there was about it. From here onwards standing room was scanty, whilst effective belaying places were the exception, not the rule. The climb now settled down to one of considerable difficulty and to a business of monotonous repetition: Amatter climbing up slabby gullies out of sight, hauling up the reluctant 'Dummy' to the accompaniment of a hymn of hate; I following, coaxing it loose from the places it grew most attached to, until we both rejoined him again. 'And so *ad infinitum*,' or so it seemed at the time. There was hardly any other incident from 8 A.M. until some time after two in the afternoon. From the time we had left the bivouac till then—having put about 760 metres behind us—we had never come on the smallest trace of the 1902 party. We had begun to think that we must have hit on an entirely different line, when ahead of us, but to our right, I saw a rope much tangled and obviously frozen to the rocks.

This point I take to be Miss Bell's higher bivouac, and the uninjured rope seems to show that this route is safe from falling stones. We kept straight on up, leaving the rope about thirty feet to our right. Very little further, shortly before the foot of the Grey Tower, I saw a rope ring; it was about ten feet away to our right, so I fetched it and brought it back with me as a souvenir for Ulrich Fuhrer. I believe this rope ring was only a few feet below their turning point, and I should like to emphasize the fact that this was the only rope left behind by Miss Bell's party which we touched.

From Miss Bell's rope ring we soon reached the landmark on this great wall, the Grey Tower, about on a level with the Hugiattel. I don't know what Amatter felt like when he first took stock of the situation, but I think we both made simultaneous use of the same word and then relapsed into silence. Perpendicular, monstrously smooth, there was no question of frontal attack on that obstacle. The steepening buttress had led us to the extreme left edge of the base of the Grey Tower or, properly speaking, wall. There was no possibility of crossing to the right; nor, could we have done so, was there any chance of turning from that side the precipitous sixty or seventy feet that seemed to cut us off from all chance of success. I felt for a moment as if there was nothing for it but inglorious retreat over most repellent ground. We had been climbing for over eleven hours, the sun had long ago left the N.E. face, the weather was looking none too bright, and an icy wind had got up. As we were at the height of the Hugiattel there was still close on 700 feet of wall above us; so on all counts we could not afford to waste time by indecision. At our feet, on the left, just where the buttress merges into the Grey Tower, a long gully descends straight to a patch of snow; it was icy and devoid of holds and looked most repulsive. That was our way, the only one.

I wish I could call up before your eyes something like the picture which I can still see before mine; could transfer to you an idea of that grey sheer wall, of the sense of oppression conveyed by its dark dingy-coloured slabs. You must not think of the Grey Tower as a gendarme sticking up from a marked ridge, but as a step where the buttress becomes precipitous.

Down that icy gully I lowered Amatter on the rope—a matter of just over forty feet—till, spread-eagled against the rock, he could traverse a step or two out of it, again to the left (east), and then watched him work his way up the most impossible slabs I have ever seen, or wish to see. This particular place

seemed to really extend him : he had for once in his life to climb all out. It proved to be the key to the mountain. I know that when a thing has been done a time or two, the fact does away with some of the moral effect. But I cannot quite imagine this bit ever being described as easy. To add to the steep angle and real difficulty of the slabs, the place occurs after eleven hours of already strenuous effort, so that the man who first led past the Grey Tower must be given every credit.

I have left Amatter crawling up those slabs. It was some time before he got level with me ; when he did so we were as yet not so very far apart. When he moved on, the character of the ground as usual soon took him out of sight. At this point we were both fully aware that the rope between us was merely an outward and visible sign of a moral and indivisible partnership. Bad as my standing room was, it had been good enough to let him down the gully, but every yard he gained above me made the link between us more of a symbol. He must have been about forty-five feet above me when he stopped. I couldn't see what he was doing, neither could I hear what he was shouting. For some time the wind had been getting up, and by now it was blowing half a gale. Yell as we might, neither could make out whether the other was trying to say something of importance or merely double-damning 'Dummy.' However, from the amount of rope out, I took it that it was up to me to move, so fixed the spare rope, slid down it, got into the place from which Amatter had started up, and fixed the other end. It was important that the wind should not take it out of reach, for had we been forced to return, I don't think that we could have got up that gully without its help. Apparently my work endured, for Messrs. Fynn and Brüderlin in 1906, the only time that this climb has been repeated, found it still fixed and it served them as well as it served us.

Once embarked on those slabs, my one idea was to be done with them, and so get to what I hoped would be better ground above. I found them as bad as they looked, but I had the advantage of knowing that another man had done them without a rope above him. Moreover, I imagined him firmly anchored, but found him waiting on a suspicion of a ledge without a delay of any sort. And the 'better ground above' resolved itself into another steep, uncompromising step, which as usual blocked the view of what was to come.

I do not know what to say about this last section of the climb. When seventeen years younger, I spoke of it and the slabs at the Grey Tower as touching the limits of possibility.

I do not want to be accused of trying to make your hair stand on end, but I do think that I ought to say that the last section of our route is hard work and demands great care. A mistake on the part of one climber might certainly mean disaster to both. The difficulties are not finished with at the Grey Tower; in fact it is after it that the most prolonged effort is called for. In our judgment, both Amatter's and mine, there is nothing for it but to strike a straight line up the steep steps of the buttress and stick to it. That day these awkward rocks were in many places glazed, as rocks at that height are almost bound to be. The whole thing was a great strain, for we could never see whether some other time-devouring obstacle might not be ahead of us. We seemed to have spent an eternity since leaving the Grey Tower—in actual fact it was just under three hours—when a series of blood-curdling yells from Amatter made me sure that he could see his way through. I laboured up a last slabby bit to find that the summit ridge was in sight, with nothing but easy rocks ahead. We struck the ridge a few yards to the left of the southern summit, stepping out from our icy wind-thrashed wall into the calm warmth of the evening sun. It was 6.20, and in a few minutes more we were on the highest summit :

‘ Port after stormy seas ’

indeed !

We spent fifteen minutes of most intense satisfaction on it—satisfaction too complete to attempt to describe. Then we started down, soon to be overtaken by a terrific thunderstorm. We plodded across to the Grünhornlücke drenched to our skins, and so to Concordia, but not ‘and so to bed.’ Arrived there at 11 p.m., we were as those before another tavern. In vain we cried :

‘ Open then the door !

You know how little while we have to stay,
And, once departed, may return no more.’

In spite of all our prayers and poundings on that door the then custodian of the inn declined to open. Supperless, we had to go to the old hut, where too we were received with curses loud and deep. So ended the first ascent of the N.E. face of Finsteraarhorn.

Space will only permit me to refer briefly to the one other ascent of this face by Messrs. Fynn and Brüderlin in 1906. As their account of their climb is given in the 1909 edition of

the 'Climbers' Guide,' I do not propose to go into details. But it would seem from it, and an early account published in 'Alpinismus' (1907), that their route differs from ours at the beginning, where they started more to the left, bivouacked about 800 feet higher than we did, and then traversed into our route. It would seem that soon after the Grey Tower, possibly at the place where they bivouacked for a second time, they appear to have left our route again and worked out to the left (east) into the face. From the account in 'Alpinismus' they seem to have heard and seen a good many serious stone falls whilst on the first part of the route, and after leaving the buttress above the Grey Tower things were even worse—a direct hit or two being registered. It is only fair to the intending climber to mention these facts, because the 'Climbers' Guide' has not done so, although the details appearing in it are obviously taken direct from the account in 'Alpinismus.' Before leaving this question, I think I ought to point out that the 'Climbers' Guide' also states that it might be possible to join our route direct from the Ober Studerjoch. As that would mean crossing the shallow, stone-swept gullies with which the face is there scored, I think it would be very risky, and I entirely agree with Captain Farrar's opinion of it quoted earlier in this paper.

The direct buttress route, as described to-night, is long and difficult. The bit above the Grey Tower is very awkward, and comes at the end of an exhausting day. But from the moment we left the Finsteraarfirn to the point where the summit ridge was sighted, we never saw or heard a sign of falling stones. In that respect at least our route appears to be fairly safe. A bivouac will always be necessary. Good weather and perfect fitness are also essential. Even after seventeen years I must say that I still consider the face a very serious proposition, not to be lightly undertaken.

My thanks are due to members who have lent me photographs and helped me in other ways. I must specially thank Mr. Paul Montandon, Dr. Dübi, and Captain Farrar.

And now before closing this paper I should like to say a few words about my very good friend, Fritz Amatter—a cheery chap who combines a sense of humour with a grim determination. If he makes up his mind to do a thing it is a fairly foregone conclusion that sooner or later he will do it. He was with that great old sportsman Christian Jossi and me when we descended Mittellegi in 1904; he decided then that he was going to do it up. He had a shot or two at it with me, but we

were beaten by bad weather. This summer he brought it off, as you have heard. He is a cold-blooded, confident rock-climber, with the adhesive powers of a limpet, and a great man on ice and snow. To him I owe the success of this expedition and a great day in my life.

FIVE WEEKS OF GOOD WEATHER.

BY T. HOWARD SOMERVELL.

[Read before the Alpine Club, February 7, 1922.]

THERE are, broadly speaking, two methods of taking a mountaineering holiday—that of staying at a centre and that of continually moving about. Last season one's aim was to effect a judicious combination of the variety of the one with the stability of the other.

Accordingly, I joined my friends McCleary and Symons at Bonneval, on July 7, 1921, having almost judged with super-human accuracy the beginning of the fine weather; but not quite. For it was indeed a cheerless welcome which awaited me as I arrived on foot from Modane, in rain, and with a 34-lb. rucksack. The contents of the chalet were Mr. R. W. Lloyd with most of his limbs in bandages, McCleary and Symons full of annoyance at the quality of the weather and of apprehension as to whether their prospective companion was at all an easy sort of person to get on with. All the mountains were in cloud, and Bonneval was looking about as dismal as it can. The only ray of cheer was given by Colonel Strutt; he had on a faultless and beautiful green coat, whose colour was reflected in the eyes of all its admirers.

However, on the next day we managed to cross the Colle Perduto to Ceresole. We did try to go up the Eastern Levanna, but we got tired of sinking up to our middles in the rock ridge that the guide-book talked about, and the warming breezes of Italy, also mentioned in that voracious volume, very nearly gave us frost-bite; so we went down again to the col, and it was indeed an awe-inspiring sight, as the cloud we were in did not allow us to see the comforting way in which the steepness relents after the first few hundred feet. It is really very steep near the top, and seemed especially so on the first day of a holiday. Moreover, I confess to some misgiving as to the accuracy of the information

Symons got from his book: it was said that after the first 50 feet an enjoyable glissade rapidly brought the climber to Ceresole, or words to that effect. Whether one must blame the book as written, or as rendered by Symons, I am not quite sure. But the fact remains that on a slope of this nature, unknown to any of the party, and with its lower part invisible, one must not take risks.

In course of time we reached the easier slope, and enjoyed what must be one of the longest glissades in the Alps. The clouds were soon above us, and the sun was shining over that wonderful valley, in which floated a beautiful blue haze, so that one felt Mr. Freshfield was right when he called the descent into Italy one of the greatest joys of a climber.

Arrived at Ceresole, we were afflicted with more of Symons' Italian traduction, for when we asked for peaches we were provided, after a long wait, with a fried trout. We occupied most of the following day in inquiring about a means of transport to Pont, and finally got on board a dilapidated Austro-Daimler, crowded with the inhabitants of the district eager for a free ride at our expense. Except for a similar ride in Skye, I can recall nothing so fraught with the sense of impending death as this precipitate journey. When we arrived at Pont it was nearly dark, and there was no diligence on to Ronco, so Symons in his best Italian persuaded a wandering mendicant to visit his sweetheart at Ronco in someone else's dogcart. At intervals he took us there too, but walking was much less fatiguing. At any rate, he carried our baggage. Arrived at Ronco his sweetheart, with a very bad cold in the head, produced some food, ostensibly for us, but in reality for her swain, who did it ample justice, judging from the bill.

Thus refreshed, the said gentleman was prevailed upon to take us on to Campiglia, where we dismissed him at 2.30 A.M., and started to woo Morpheus, with scant success, in the village square.

Our plan was to traverse the Punta Rosa dei Banchi to Cogne, an expedition recommended by Mr. Yeld as one of the finest walks in the Alps. We started up a steep and doubtful path in the general direction of that peak.

After a toilsome and tiring walk we ultimately reached a grassy crest connected, apparently, with the true S. ridge of the mountain. Mr. Yeld's account of this ridge had led us to picture it as an easy day for a lady. I am in no position to judge as to its facility for the fair sex, but we mere men certainly found it more difficult and slower than we had

anticipated, and agreed that it was certainly no easier than the ordinary way up the Dent Blanche. There were two sections of quite hard climbing of the Lake District variety. Hence we arrived on top of our peak very late, and were thankful to find its W. ridge very easy going. We left this after an hour or so, and ran down the glacier on its N. side in the deep, soft snow, often sinking up to our waists and having to dig one another out. We ultimately reached the Fenêtre de Champorcher, and started our downward path to Cogne. Darkness and tiredness proved so depressing to our spirits—both varieties—that we selected a small open-air chapel and attempted to sleep therein. The building, however, was so skilfully ventilated that fresh air in motion was obtainable in every cubic foot of space, and we concluded that the building had been designed for the purpose of anemometric research. To make matters still more trying, Symons seemed to get some sleep, while McCleary and I could not. It was a sleepy party that toiled on to Cogne in the morning, but we were refreshed by some hot milk at Champlong, and our spirits were further cheered by a magnificently clear view of Mont Blanc at the foot of the valley.

We afterwards met Mr. Yeld, who seemed to think our route was possibly a new one, and probably his description applies to the south-eastern ridge, which looked as if it were far easier than ours. I shall unhesitatingly recommend this climb to any mountaineer with whom I shall chance to quarrel. All the same, as a training expedition at the beginning of a holiday the whole thing had its uses, and the view from the Fenêtre at sunset was very fine; moreover, we obtained a good idea of the less frequented end of the Graian Alps, which a more direct approach of Cogne from Ceresole would not have provided.

At Cogne we stayed at the Grivola Hotel, and our first climb was up the mountain of that name. We had an amusing time finding a sleeping-place, but finally hit on a chalet, largely owing to the kindness of someone else's guide. It was a red-letter night for the smaller inhabitants of the chalet, but their enjoyment was at the expense of the larger visitors. We awoke from our sleepless night to a fine morning though we had gone to bed in a thunderstorm, and on our arrival at the Colle della Nera there burst upon us a distant view of the Valais, blue and ethereal, with clouds rolling away as the sun gradually lit up the summit, first of Monte Rosa, later of the other peaks. The Grivola was tackled by the ordinary way on

the south-eastern face, but the climb was not without incident, for at the only place on the rocks where the anchorage was insecure a stone the size of a pineapple hit the slab on which I was climbing three inches from my knee, having fallen some 600 feet from a careless party above us. This somewhat narrow escape was entirely due to bad leadership on my part, as we found on our descent that a safer and equally rapid route can be taken by keeping to the crest of the buttress which we had left. We varied the descent to Cogne by passing close to the Punta del Pousset, an uncomfortable way down for feet tired after a long day, but alleviated by milk at Pousset Inférieur. After a day's rest it was time to go to Valsavaranche, where we were due to meet additions to our party. McCleary, owing to a sore foot and to his sleepless night at Lauzon, elected to walk round by Villeneuve, while Symons and I essayed to traverse the Herbetet. It was a dark and stormy night, our path illumined from time to time by the lightning as we tramped up the Valnontey.

We found the bridge represented by a single pole, which bore a handrail only on a third of its length, and the local bridge-builders had selected the widest and most rushing part of the torrent in the valley. It was with great awe that we crawled along it in the pitch darkness, lit only by the fitful light of celestial electricity. Symons' vermiform progress was the funniest thing I have ever seen, and I have no doubt my crawl was equally amusing to him. Arrived at the other side, we were able to laugh in safety, and had a little food. We went on until the darkness could literally be felt, as the path was strewn with large and angular blocks bent on trying conclusions with our shins.

We slept at the foot of the ascent to the Herbetet chalets, now useless as shelter, until dawn beckoned us to proceed. We tackled the N. ridge of the Herbetet from the S. col, and found it very slow going above the rocky part, as it was steep and icy, and every step had to be cut. When within 50 feet of the summit rocks, we were alarmed to see one of the latter break off and slide down a few feet from us, so we pondered a moment as to the advisability of going on. Discretion proved the better part of valour, but it was annoying to give in after two hours of step-cutting.

We soon got down to the glacier, which was in worse condition than any we saw even in 1921. We had to effect a most tiresome traverse of a snow-slope to avoid its soft, slushy surface, and even then sank in the snow above our waists.

But all sorrows were forgotten at the supper-table at Dégioz, and after a night's rest Symons and I started for the Victor Emanuel Hut, leaving McCleary to await the arrival of his family. Here we stayed six days, and a more charming place to stay in would be hard to imagine. The two guardian angels were most kind and obliging, and proved most intelligent pupils for Symons' Italian. The wine—Vino Bianco Spumante, at 1s. 6d. a bottle—was quite incomparable. Then there are many climbs around for which one can set out at the comparatively reasonable hour of six or so, and if it is raining one can change one's plans and start for a shorter climb when the rain stops. Moreover, there is no need there for those rest days which have such a tiresome habit of possessing the best climbing weather, and, not least, our bill for six days was only 28s. The usual visitors were non-climbing Italians with walking-sticks, who had come to do the Paradis, and were most amusingly ready to offer *félicitations* to anyone who had climbed anything they had heard of. These visitors were conveniently kept from disturbing us by the self-sacrifice of Symons, from whom they learnt the latest in Italian for hours together.

Symons and I had a good day on the Ciarforon, which we ascended by the N.W. ridge in a thunderstorm; it was quite a good climb of four and a half hours, with some fair rock-work about half-way up. At the top we had a taste of electrical treatment, for while we were on rock a brush discharge took place around the brims of our hats, while the moment we stood upon snow there was nothing doing. We soon regained the lower snows by the S.W. ridge, glissading most of the way just on the W. side of the ridge. The next day we set out on what we thought was a new climb, the S.W. ridge of the Becca di Monciair. We toiled up the soft wet snow to the Colletto di Monciair, keeping under the rocks and often walking along the corridor between the rocks and the snow, on the true right bank of the glacier, in order to avoid the soft snow in the middle of the glacier. Arrived at the col, we turned our attention to the imposing rocky ridge of the Monciair; it went easily enough at first, with a few traverses on the eastern side. At one point I attempted to rejoin the ridge up a very steep and very loose and very difficult chimney, but the rope was not long enough to allow me to gain its exit on the ridge, and Symons was getting rather tired of dodging the missiles which I was aiming, with some precision, at his head; so I came down (I will not say climbed), and we continued to

traverse along easy rocks until a place of less resistance was found whereby to regain the ridge. At this point we saw, to our dismay, a small cairn. The priority of ascent was clearly not for us, but the climb was none the less enjoyable, as the slab above this cairn provided a most exposed climb with good hold—and what more can a mountaineer desire?—leading after 150 feet or so to easier rocks which conducted us to the summit in a few minutes. The usual N.E. ridge gave us a rapid descent to the Colle di Ciarforon, and so home.

On arrival at the Refuge we found from the book there that the climb had been done a week before by a party which included Count Bonacossa and Maria Sbrojavacu. Their route was evidently somewhat different from ours, as they mentioned many cairns, and we found but one.

Shortly after our return the McCleary and Thornycroft families arrived, all in various stages of perspiration, with large loads of luxuries, such as bread and jam, as they did not know how well the hut was stocked. On the following day we all went up the Paradis, and were fortunate enough to get a really glorious view. While glissading down I was unskilful in some way, with the result that the spike of my axe went through the palm of my left hand. I only record this as it enabled me to dispose of the medical aphorism that rest is the best cure; for on the next day I was rock-climbing for four and a half hours with the damaged hand in constant use, and the wound healed perfectly and without that tiresome stiffness that rest ensures. On arrival at the hut we met Mr. Yeld, who had come up with two guides to attempt a new climb which he had been wanting to do for years. He started off to sleep that night on the Colle del Gran Paradiso, with a view to doing the climb the following day—a plan that caused us all greatly to admire his sportsmanship. He didn't get his climb done, owing to the hard, or rather soft, going on the Noaschetta Glacier, but if his climb is done by any of our Club it strikes me it should receive the name of Yeld, for no name more fitting could be coupled with a landmark in the Paradis Massif. Mr. Yeld was kind enough to put us on to a new expedition on the Cresta Gastaldi, which had never been done by its S. face. Accordingly, Symons, Thornycroft, and I started off the next morning for the Noaschetta Glacier by way of the Colle del Gran Paradiso. The glacier was terrible, and the places in which one sank up to one's waist could not be avoided. We noticed that during July most glaciers in

the district were of this consistency, no doubt owing to the excessively hot days, followed by warm, cloudy nights.

The peak was obviously to be attacked beyond the point where the Glacier de l'Abeille overhangs the Noaschetta Glacier. Below the hanging glacier is a snow-shoot, which was evidently to be avoided, so we approached the rocks by the first large couloir after this snow-shoot is passed. The couloir is very difficult to enter, though in a snowy year it would be easier, and the first 100 feet from the foot of the couloir, up its true right wall, are fairly stiff. One soon gets to easy rock on the buttress to the true right of the gully, and about 400 feet from the start one can cross the couloir on to another and larger buttress on the left. Straightforward and fairly simple rock leads to the top of this buttress, about half-way up the face of the mountain. The buttress is connected with the main mass of cliff by means of a short snowy arête, and it was up this that we approached what was obviously going to be the harder part of the climb. We ascended for about 50 feet to a long ledge, above which are enormous slabs, the upper of which overhangs. We went up the lower one on nice rough rock, reminiscent of the Cioch Slab in Skye, and found the upper slab somewhat uncompromising. The only thing to do appeared to be to take a long traverse to the left across the track of potential stone-falls, for it was a S. face of a steep rocky peak, on a hot morning. But the quality of the rock was apparently so sound that we thought a stone-fall unlikely, so we took to the traverse for about 200 feet. This brought us to a groove in the rocks, which were arranged in large steps, each 20 feet or so in height. Up this groove we climbed for 150 feet or so, until a small platform was reached. Above us was a slab of evident severity, presenting a small crack at its left-hand side, and a vertical corner on its right. I chose the latter, and went up as far as a step where extreme caution was essential in the matter of balance. I came down, as my rucksack, like that of the hero of 'Pilgrim's Progress,' must be removed before the Hill Difficulty be surmounted. I tried again, didn't like it, and came down. But the prince in the fairy-tales has never been known to fail at his third shot, so I had another try. The problem was, after climbing for 20 or 25 feet of steep slab, to preserve enough strength in one's fingers to allow of one's weight to hang a good deal outwards while a knee was placed on a small shelf at an awkward height on the right. By rushing the whole slab in order to save one's strength, the difficulty

was surmounted. The others climbed up by the crack on the left, which seemed to go all right. Above this slab the subsidiary arête was easier going, and in a short time the snowy slope at the top was attained. Steps were soon kicked in this, and the summit was reached about four and a half hours from the start. Subsequent parties on this interesting and varied little climb, which I recommend especially to devotees of British rocks or of Chamonix aiguilles, will find it easier if they have not stuck an ice-axe right through the palm of their left hand on the previous day. Leaving the crest, which was rather cold, we espied in the direction of the Paradis a pinnacle of rock, where we sought to gain the ordinary route for the Paradis and a rapid descent to the hut. So we passed along the Col de l'Abeille, among some wonderful and fantastic snow architecture, and made for the rock ridge running towards the top of the Paradis. We lunched at a suitable rocky halting-place, and climbed up a chimney of very rotten rock to the top of our pinnacle. Imagine our surprise when we found ourselves on the top of the Roc du Grand Paradis, but a few yards from the summit of the Paradis ! It is not often one climbs by mistake up the highest mountain in a group on one's way *down* from one a good deal lower ! We had been firmly convinced that our rocky tower was the one that is just to the N. of the Becca di Moncorvè. In justice to ourselves may I mention that it was by now fairly cloudy ? We cut down the short slope of ice leading to the Paradis cart-track, and jumped the bergschrund. On arrival at the hut we were sorry to hear that Mr. Yeld had been forced to abandon his climb. On the next day those who had not done the Gastaldi expedition went up the Tresenta and traversed the Ciarforon, and the attractions of the Refuge could not keep Thornycroft and myself from accompanying them. This was our farewell to the Graians, for we had arranged to go on to Courmayeur, which we proceeded to do next day.

I must pass on. Fain would I tell of the Italian students at Dégioz, who made us sing with Jazz effects the national song of Tipperary ; of the efforts we made to keep cool by baptismal methods at the village pump of Villeneuve ; of the char-a-banc which ultimately arrived from Aosta containing the dutiful Symons ; and of the glories of Mont Blanc in the evening light as we sped on to Courmayeur. But time passes, and we are next seen sallying forth from the hotel at ten in the evening *en route* for the Aiguille du Géant,—four of us,

Symons, young McCleary, Durham (an Oxford friend of the latter), and myself. An Italian band of Fascisti or Pacificisti—anyway, something in uniform—was encamped just above Courmayeur, but Symons' Italian rose to each occasion on which we were challenged. We reached the Rifugio Torino at about 4 A.M. A rest was welcome on the floor till six; we were aroused to pseudo-activity by the arrival of pseudo-coffee. The Géant was ascended in due course in almost record time. I set a bad example by attempting to do without the ropes, and besides we were a party of four, so it was nearly dark when we returned to the hut. Fergus McCleary and I voted for a run down to Courmayeur as soon as possible. Durham we left in the charge of Mr. Solly, whom we met at the hut. Symons accompanied us until he found a shady and shaly nook in which to spend the night, but we two junior folk were too conscious of parental anxiety to do anything but press on homewards. We arrived about 1.30, having been on the go for twenty-seven hours. This hutless variety of climbing is rather apt to lengthen expeditions, though very good for one. In the Cogne district it is often indispensable; but it lacks those golden opportunities for the advancement of the science of parasitology so often afforded by sojourn in hut or chalet.

Having reached Courmayeur at 1.30 A.M., our chief difficulties began; for we entered a city of the dead. No sign of life existed. Had the Fascisti sacked the town, or were the inhabitants in hiding from the bombs shortly to be dropped by the Communists on the Capitalists of the Hôtel Mont Blanc? The door was locked, the ring of the bell resounded as through an empty catacomb.

Fergus McCleary, my sole support in these trying moments, left me in the street while he began the severe and sensational ascent, unroped, of the Hôtel Mont Blanc. With the agility of a chamois he leaped from ridge to cornice, and arrived on the balcony. The door opened. He entered the gloomy hall, ran downstairs, and let me in. Soon our friends were aroused. We talked of quails in aspic, of hot coffee, of tinned turtle soup, and all the other necessities of the modern mountaineer. But, alas! the Everest Committee was not in session: the Primus had no oil, the tap water was cold, and we were forced to content ourselves with two penn'orth of chocolate and some water.

Nevertheless, to my intense joy, we observed that McCleary the elder and Thornycroft were all agog for a traverse of Mont

Blanc—starting, they said, at 8 A.M. for the Sella Hut. I rushed into bed, to waste no more of the precious night hours in eating and drinking and making merry on chocolate and water.

A start was made soon after breakfast, and we were accompanied by Mrs. Thornycroft and her aunt, who intended to go up to the Quintino Sella Hut with us, and down next day with two guides. Unfortunately, Mrs. Thornycroft felt unwell beyond Pertud and elected to return; we took on the guides to carry stuff up to the hut, intending to send them back next day, while we traversed Mont Blanc by the rock route. This climb had not been done for two years, and the guides were so excited about it that we finally suggested they should follow us on another rope—a somewhat original order of ascent.

On the way to the hut we were glad to have the guides, owing to the very misty weather and the complete absence of track; as it was we only just reached the hut before dark.

This was my first introduction to this side of Mont Blanc, and I was immensely impressed with the scene. Is there, I wonder, any hut situated amid more completely glorious surroundings? I doubt if it is possible. But we saw it at its best, with thunderstorms continually echoing among the mighty cliffs and a clear blue sky set with twinkling stars above the Aiguille de Trélatête. The hut was in very good order, and it was soon warm enough to dry the heavy thunder rain from our clothes. We started at 4.45 A.M. The bergschrund was reached in about an hour, and was of the variety which do not overhang, but have no bridges, and are very tall from base to summit. Fairly extensive quarrying operations were necessary, and delicate enough balance to get over the top. However, the schrund yielded at last. Beyond that point all was straightforward. We attacked the rocks as soon as we could get on to them, and kept near the right-hand edge (looking up) of the main mass of rock that leads from near the summit. The rocks are varied and straightforward. We felt it was a most delightful climb, and arrived on the summit ridge in less than nine hours from our start. Resisting O. G. Jones' invitation to run the last 500 feet, we walked it with the deepest respect for the monarch of the Alps and for our own constitutions, and after a brief halt ran down to the Vallot Hut. Here we had the best feed I have ever had on a mountain. We had brought a bottle of *alcool (d brûler)*, some fresh peaches, and various accessory articles of diet, by means of which we were soon all provided with coffee and soup. We

also made a species of punch from hot wine and sugar, and were so refreshed in body and soul that in spite of our lengthy halt we were at the Grands Mulets within twelve hours of our start from the Sella Hut. Here our difficulties began. We crossed the Glacier des Bossons, trying to get straight to Montanvert, with an eye on the Grépon next day, as previously arranged with Mr. Solly at the Col du Géant. But the séracs at the edge of the glacier, covered with poised blocks of stone, were too much for us. So we all explored the glacier in different directions to find a way off, as it was nearly dark. One of the guides found it finally, and we were soon on the path between the Bossons and the Taconnaz, and arrived about 10 p.m. at Bossons village. The last train to Chamonix was 10.30, so we were just in time, and put up at the Hôtel de la Poste.

At Montanvert the next day we found that Solly and his party (Bower and Meldrum) were also a day late, so the Grépon was duly traversed the day after. The rocks were phenomenally dry, and we used rubber-soled shoes in places, thus desecrating the Alps with the latest from Lakeland. And that, too, in return for the exaltation of the Napes Needle to its position on the Montanvert postcards as 'une Aiguille à Chamonix.' But the climb was most enjoyable, and was duly celebrated by an impromptu dinner at midnight, largely organised by the indefatigable activities of Mrs. Solly.

Next morning I was up, betimes, for the 6 o'clock train from Chamonix, arriving at Stalden at 5.30. I put my best leg foremost, and reached the Hôtel des Glaciers at Saas at 9 p.m., only to find that Roberts and Beetham, in silent suffering at my lateness, had gone off a few hours before to the Weissmies Hotel for the S. ridge of the Laquinhorn. I went to bed, got up early, and was within a few feet of the top of the Laquinhorn by the easy way when they left the summit: they both seemed very fit for a 4000-mètre peak on the first day of the holiday. I vainly pointed out that though I *was* a day late I had done my best to catch them up; to which they replied, that though I *had* done my best to catch them up, I was a day late. They really let me off very lightly, considering they had been on six hours of loose rock. The following day we went to the Mischabel Hut for the inevitable Südlennzspitze-Nadelhorn traverse.

The day after coming down we went to the Britannia Hut, Bishop, a keen Yorkshire rambler, having joined us, and did the Allalinhorn in a snowstorm by the N.E. ridge; the next

day we traversed the Rimpfischhorn by the N. ridge—a very fine climb, and as far as the big gendarme is concerned, a very hard one. The books talk about ‘*abseiling*’ down this 100 feet vertical pitch, but in point of fact it is quite climbable, though harder, I thought, than anything on the Grépon. Bishop was affected by an unruly stomach on the way down and slept at Fluh Alp, while the rest of us went on to Randa and toiled up to the Dom Hut, only to find it was reserved for a S.A.C. Sectional week-end. However, we got some sleep, and started for the Dom half an hour later than the Section. We got to the summit, I think, several hours before them, climbing by the easy and snowy W. ridge. At any rate, we stayed on top for an hour and saw no signs of them, but the day’s work before us was long, so we pressed on to the Täschhorn. The ridge between Dom and Täschhorn, as many of you know, is a beastly loose place, and we could not make great speed going down. The second part, however, on to the Täschhorn itself is of beautiful firm rock, and we quickly surmounted it, Beetham leading at a furious pace. Down to the Mischabeljoch, after half an hour on the Täschhorn, took a long time, as indeed it is a long way. Arrived at the col, there was not too much daylight left, and a descent to Randa was mooted; but I was convinced, and managed to persuade the others, that the other side would go, though the Saas Glacier was very trying with its numerous crevasses. Eventually we arrived at the well-known rocky ridge half-way to the Langenfluh, and laboriously descended a steep slab near its lowest point, which brought us to a place on the lower glacier whence, as we had spotted from above, the Langenfluh could be reached if certain crevasses were avoided. We reached dry land just as it got dark.

We found at Saas that the local guides had informed everyone that some amateurs had gone to the Britannia Hut, and were still there, as they found they couldn’t get back without guides, much less do any climbing. So our accounts, albeit modest, I hope, of our four days’ wanderings were received with about as much credulity as usually attaches to the conversation at a golf club tea, or dinner at a Scotch fishing centre. The Saas guides are evidently qualifying for a political career.

Our last climb was a traverse of the Weissmies and Portjengrat from N. to S., which Beetham and I did, as the others preferred the pastures of Saas. I have at last discovered why people who have no interest in English flowers suddenly develop a passion for Alpine plants. It is an excuse for not

climbing. Anyway, we who preferred the upper snows were rewarded by a first-class climb and an incomparable view extending from the Ortler to Monte Viso, the Dauphiné, and the Jura. The day was the clearest without exception that I have seen in the Alps. Next day, starting early, we all walked to the Monte Moro Pass, where we, who had survived so many ridges, were turned back by a *gendarme*. Why the good man didn't understand my Italian, I don't know. Anyway, we longed for Symons' presence here, which might have saved a lot of trouble. 'Avete voi una scatola di flammiferi?', the only sentence I know, was utterly unavailing. He could make nothing of a Greek limerick or the name of some Scotch mountains, so we had to withdraw. It was too late when we had found another pass, by compass in the cloud, to get to Macugnaga at a reasonable hour, so we were forced to return to Mattmark, whence we started next morning for a fight against a six-hours' blizzard over the Adler Pass.

It was evident that the good weather had gone, and we must be going too. Accordingly, Beetham and I left on the 13th, leaving Roberts very reluctantly, as it was obvious that serious climbing was gone for some days, and any decent rats who leave the sinking ship hate seeing their late companions left behind to get wet.

TWO SMALL FIRST ASCENTS NEAR MODANE.

By LOUIS COMBEROUSSE, C.A.F.

IT is the fashion to say that there are no more virgin peaks in the Alps; no doubt none of the great peaks remains unconquered, but it is likely enough that in remote districts which are difficult to reach virgin summits may yet await the climber. Still, it would be hard to credit that at the very gates of Modane the mountaineer could build his victorious cairn on a previously untrodden peak. Yet this is what happened to us this year on two occasions.

On May 15, 1921, accompanied by my friend J. L. Baud and by his sister, I left Modane as soon as the train had arrived. Various Lenten ceremonies which were taking place at Aussois detained us there till 10 o'clock, and it was only at 1 P.M. that we arrived at the chalets of Fond, heavily laden as we were. It was very late to think of climbing anything, and there was

a great temptation to devote the remainder of the day to the varied occupations of 'hut' life. The Pointe de Plan Net, however, was well seen at the end of the valley, and had attracted our attention on the way up. The weather was threatening, and, fearing snow and fog for the morrow, we decided to start and climb as high as the approach of night would allow. I was tempted to regret this decision, as at my suggestion we had refrained from bringing snow-shoes. Two months earlier, indeed, I had climbed the Pointe de Labby, and had got as far as the glacier without touching snow. I had thus beguiled my companions by describing the Aussois Valley as a sure refuge from winter and its horrors. This year, however, the winter had only come in spring—and scarcely had we emerged from the Fond basin when progress became troublesome owing to the deep soft snow. My friends' reproaches now so shamed me that I withdrew to the rear of the party, where I had the double advantage of no longer hearing their harsh words and of having a well-made track to walk in. Our objective was the Col du Cr   de la Roa; but in order to avoid avalanches we kept straight up under the peak, and, by very steep snow-slopes and intervening ice-glazed rock pitches, at 5.30 P.M. we finally reached the base of the wall. The rocks were very cold, the rope frozen, and the last illusion of a comfortable ascent soon vanished, blown away by an icy wind. After a short scramble we took to the N. ar  te, which was crowned with fine cornices and afforded good going; yet it was necessary to leave it on account of the cold. We traversed the E. face, and by 6.30 P.M. we were on a little platform at the foot of the last tower, which was the top. Between the tower and our shelf was a wide gap spanned by a snow-bridge, and, since it was ordained for this day that all the luck should be on our side, we found that the bridge would bear. It led us on to the actual wall of the tower, and by means of a last chimney in the W. face above a superb abyss we at length reached the summit. We were certainly delighted with our success, but it was 7 P.M., and we thought it unwise to prolong our stay on this virgin summit in wind and sleet and with the threat of approaching night. We quickly crossed the snow-bridge to return to our platform, and, abandoning the route of our ascent, we scrambled down the middle of the E. face by a combination of ledges and chimneys admirably suited to our haste. Then once more soft snow and glazed rocks; night came on, and it was not till 9 o'clock that we got back to our chalet. It was past midnight when

we turned in. All the interval had been employed in drying ourselves.

On returning to Lyons I had leisure to read in the *ALPINE JOURNAL* an article by Mr. C. F. Meade on the environs of the Polset hut. He mentioned a virgin peak which I knew well, and had already coveted. The *Pointe Orientale de la Partie* (8350 m.), which rises at the W. foot of the *Pointe de l'Echelle*, had attracted Mr. Meade's attention, and I assumed that he was contemplating the ascent of it. I must confess that this idea decided us to attempt at once to get there first. With this intention we left the express at Modane on June 28, 1921—my friends, Matter, Petitpierre, and myself. Lorigère is an enchanting situation, but we passed through the glen without stopping; and by means of the *Col de Chavière* footpath, and then by that of the *Col du Ravin Noir*, we at last arrived at 11 A.M. on the *Glacier Sud de la Masse* at the base of the *Pointes de la Partie*.

Some months before the war I had ascended the *Petite Pointe Orientale* by way of a snow couloir in the S. face. Another couloir parallel with it led to the western arête of the *Haute Pointe Orientale*, and we decided to follow it. I remembered in time that I was the photographer of the party; everybody knows that it is difficult to cut steps and use a camera simultaneously. I therefore roped last, and for two hours was able to enjoy without fatigue the agreeable spectacle of my friends busily carving a comfortable staircase for me up an ice-wall covered with crumbling snow. But all things come to an end, and we emerged on the eastern arête, where a flat slab enticed us to breakfast while we gazed at the panorama. I must admit that the panorama was more attractive than the breakfast, so we were soon at work on the snowy arête, reaching soon after the final rocks. They were fairly smooth but free from snow, and so warm in the sun that climbing them was a real pleasure. The top was destitute of cairn; we built our own, and a few mètres lower down discovered a spacious cleft where, for two hours, we could smoke while admiring the magnificent abyss that surrounded us, and the sparkling horizons of an almost unlimited panorama. But it was 4 o'clock, and it behoved us to descend. We all agreed that our way up would not do for the return, as it would be dangerous from the sun. There was no other solution but to follow the S. arête in order to rejoin our tracks on the névé below. To tell the truth, the rocks looked rotten, but it is generally agreed that stone avalanches work on a

more modest scale than snow avalanches, and besides we had no choice. I was given the honour of being first to test the holds in the descent, and I made every effort to leave only good sound rock behind me. To judge by their exhortations my companions seemed to derive the greatest pleasure from seeing the stones thundering down to left and right of the ridge; I, on the other hand, had the satisfaction of performing the duty allotted to me, and also the less disinterested pleasure of insuring myself against dangers that might otherwise descend upon my head. At length, after three hours of noisy progress, we came to peaceful snow, and making a short traverse we were able to rejoin the tracks of our ascent just above the bergschrund. We raced down past shale and rhododendrons, and then over flowery grass slopes; finally, with bunches of narcissi, we entered the 1 A.M. express for Lyons.

There are, therefore, still virgin peaks to be found; and if such conquests are somewhat slight when they appear in the *ALPINE JOURNAL* beside the narratives of Himalayan explorers, I think, nevertheless, that it is quite worth while devoting a spare Sunday to them. For my own part, I have derived from these climbs an intensity of happiness which I have often failed to find on greater and better-known mountains. Is not the mountaineer's highest reward the discovery of a new world, however humble it may be?

MAPS OF THE ALPS OF NEW ZEALAND.

[Through the good offices of Mr. A. P. Harper of Wellington, the Surveyor-General of New Zealand has been kind enough to present to the Club:

Nine sheets on the scale of one inch to one mile covering the county of Westland and showing the west side of the New Zealand Alps from Harper's Pass to Mt. Aspiring.

Eleven sheets on same scale covering the eastern survey of the same range.

A map of the South Island on the scale of one inch to ten miles.

Mr. Harper has been good enough to endorse many explanatory notes on the maps themselves and adds the following details:

1. The sheets only show outlines of rivers, glaciers, etc. The peaks are trigonometrically fixed and measured.

Details of topography are not shown on large-scale maps—and when shown on smaller scale are not very reliable from a climber's point of view. Such maps as are published in the Annual Survey

Reports (of which some are in the A.C. Library) and in my 'Pioneer Work' and similar books are correct enough for climbers' purposes. There is, however, a great deal to be filled in, outside those localities.

2. There is some difficulty in making the 'Summit of Southern Alps' line fit in joining the eastern and western surveys. But for any one crossing from one district to the other the maps are sufficiently clear to indicate their position.

3. A 10-mile to one inch map of South Island is also sent to show general position.]

EASTERN SURVEY.

THESE sheets are arranged in order showing the continuous line of Southern Alps from Harper's Pass (Sheet I.), down to Aspiring.

The portion covered has been surveyed trigonometrically, but there are no published maps showing close details of topography—except such local sheets as are published in 'Pioneer Work' and similar books and the various 'Survey Reports.' From an Alpine standpoint—except the head of the Waimakariri R.—Arrowsmith Range (Sheets V. and VI.), Godley and Tasman Glacier systems (Sheets VII. and VIII.), practically no work has been done. Indeed, except Sheets VII. and VIII., the whole range northwards is, from a climber's standpoint, practically virgin country.

South of Sheet VIII. to Haast Pass is well known to deer stalkers from the eastern side, and parties are penetrating into the Landsboro' and Wills River on the West. Here, however, the peaks are practically untouched.

There is a gap between Mt. Alba on Sheet No. X. and the country shown in Sheet No. XI. (Aspiring). This is on the eastern side apparently unsurveyed. On the west side, however, the district has been explored up the Waitoto-Arawata rivers by my old companion C. E. Douglas—a reconnaissance compass survey, somewhat the same as I did on the Landsborough-Karangarua and Cook Rivers further north. See Westland, Sheets VIII. and IX.

General Characteristics.—Open 'tussock' country for sheep runs—with patches, and in some places large areas, of open and easily penetrated 'Birch' (Beech) forest at the heads of rivers. The sheep stations 'run' the country to the limitation of vegetation, and it is well known up to the snow line by shepherds and musterers. It is also 'stalked' for deer in the season.

This applies practically to the whole eastern side from Harper's Pass to Lake Wanaka and Haast Pass. South of that the country becomes difficult and more generally rugged for a greater distance from the 'Divide.'

WESTERN SURVEY.

From Lord Glacier, Wanganui R. (Sheet III.), down to Franz Josef Glacier little is recorded as to details. Rough exploration has been done at times, but information is difficult to get. From Franz Josef to McKerrow Glacier and head of Mueller Glacier is pretty well climbed, except several good secondary peaks on the offshoot ranges.

Further south is a fine field of virgin peaks, good climbs and big icefields on both sides of the Landsborough R. (see Sheet No. VII.). The Hooker Range has four or five good peaks.

From Haast Pass to Aspiring is a great field for closer Alpine exploration. Parties have been and are spasmodically operating here from time to time.

The rivers from the Arawatta in the south to Waiho (Franz Josef Glacier) have all been explored and recorded in Official Reports by Douglas (south of Haast R.) and myself north (see 'Pioneer Work').

General Characteristics.—After going inland for from five to ten miles the country is rugged, inhospitable, and heavily timbered forests; very difficult to penetrate; rivers full of big boulders and repeated gorges; excessively steep slopes—in fact very difficult country to tackle.

Forest conditions are found up to 3000 ft. on the hills facing the sea, and 2500 ft. inland, succeeded by dense 'scrub' or stunted trees gradually diminishing to 8 ft. in height, and impossible to penetrate without cutting a route. The scrub limit is, say, 4000 ft. on sea faces, and 3000 to 3500 ft. inland. Above the scrub are open tops of 'snow' grass which grows in big tussocks with blades from 1 to 3 ft. long—good travelling. This obtains up to, say, 5000 ft. Then rocks and snow. These remarks apply to every river on the western side except where the Fox and Franz Josef Glaciers descend to the low country.

For hints as to how to take this country see 'Pioneer Work' Appendix, and also N.Z.A.I., vol. ii., page 20. These, though written twenty-seven years ago, are generally applicable still.

MAP OF SOUTH ISLAND.

Much exploration remains to be done east of the Sounds in S.W. corner of the Island. Excessively rough, mountainous and heavily timbered country, and very difficult. Parties are gradually exploring it. No big glaciers here or high snow peaks.

ARTHUR P. HARPER.

Wellington, N.Z.

January 26, 1922.

THE AMERICAN MEMBERS OF THE ALPINE CLUB.

THE Second Dinner of the Association was held on December 2, 1921, at the Tennis and Racquet Club in Boston, the following members being present: Messrs. William Williams, Charles E. Fay, Freeman Allen, Allston Burr, J. W. S. Brady, I. de Bruyn, and H. B. de Villiers-Schwab. The following attended as guests: Messrs. Howard Palmer, J. Duke Smith, George N. Whipple, and Henry S. Hall, jun.

At the meeting it was moved and unanimously carried that the second paragraph of the By-laws be altered so as to read: 'Any member of the Alpine Club living in the United States or Canada shall be eligible to join, and shall be invited to do so.' The announcement that the Canadians, Messrs. J. M. Bell, E. C. Francis, and A. O. Wheeler, had already accepted membership was received with great pleasure. Professor Fay read a letter from Dr. Norman Collie, President of the Alpine Club, which expressed his pleasure at the formation of this association.

Professor Fay was the lecturer of the evening, and showed some 125 lantern slides of mountain peaks in various parts of the world, beginning, out of compliment to the Chairman, who was a pioneer in attacks upon it, with Mount Saint Elias. Numerous views were shown between sea and summit, taken by Signor Sella during the expedition of the Duke of the Abruzzi in 1897. These were followed by numerous views taken in the Swiss and Tyrolean Alps, chiefly by Sella, though several representing climbs on the Aiguilles about Chamouni were made by Abraham. A few characteristic views in the central range of the Caucasus, among which those of Ushba were most noteworthy, were followed by two remarkable series of scenes in the Himalayas: first, those taken in the Freshfield-Garwood expedition around Kangchenjunga in 1899, among which superb views of Siniolchum, regarded by connoisseurs as 'the most beautiful snow peak in the world,' attracted special attention. This series was followed by one of views in the Western Himalaya, taken during Abruzzi's expedition to attempt K₂ (the world's

second highest peak) in 1909. Several of these were most striking, especially those of the great peak itself. Much interest also attached to those of Bride's Peak, upon which the record climb of 24,583 ft. was accomplished. The exhibit closed with views of the world's three highest peaks.

Following the lecture there was further informal discussion, and the Dinner broke up about 11.30 P.M.

The Third Dinner is to be held in New York City during the spring of 1922 at a date to be selected later by the Committee.

H. B. DE VILLIERS-SCHWAB,
Hon. Sec.

11 Broadway, New York City.

The members of the Association are :

Dr. Freeman Allen.	Mr. Val. A. Fynn.
Mr. J. M. Bell.	Mr. Le Roy Jeffers.
Mr. Allston Burr.	Mr. Albert H. McCarthy.
Dr. J. W. S. Brady.	Mr. H. F. Montagnier.
Mr. I. de Bruyn.	Mr. Henry B. de Villiers-Schwab.
Professor Charles E. Fay.	Mr. Joseph C. Smith.
Mr. J. Ellis Fisher.	Mr. A. O. Wheeler.
Mr. E. C. Francis.	Mr. William Williams.

LE GROUPE DE HAUTE MONTAGNE DU CLUB ALPIN FRANÇAIS.

THIS young and very vigorous offshoot of the C.A.F. held its annual meeting in January. It consists of 15 honorary, 63 active, and 34 graduating members—representing nearly all the sections of the C.A.F.

Among the *new* ascents made are :

Mont Collon, by N.W. arête. Myrtil Schwartz.

Col des Nantillons (variation). T. de Lépiney and J. Savard.

Aig. de Talèfre over the Aig. Savoie. T. de Lépiney and J. Morin.

Le Peigne, by the Chamonix face. J. and T. de Lépiney.

Six Carro, by the S.W. face. P. and J. Logeais.

Pic Central de Belledonne, by N.E. arête. J. Repiton-Préneuf and Dalloz.

Aig. du Géant, variation on N. face. P. Chevalier, R. Rheims, and J. Savard.

M. de Lépiney and Mdle. de Lépiney have translated literally the *Mont Blanc Führer* of the Ö.A.C., and have

added a note of the ascents since made. Mdlle. de Lépiney, MM. Damesme, T. de Lépiney, and Morin are busy on a translation of the *Dauphiné Führer* of the O.A.C. and of the Dolomite portion of Purtscheller's *Hochtourist*, to the first of which M. Champignoux is adding route-marked sketches.

The committee is composed of M. Henri Bregeault, well known to us as the Secrétaire-général of the C.A.F., and MM. Chalonge, Chevalier, Galichon, T. de Lépiney, and V. Puiseux, who are among the moving spirits of the Groupe.

Among the hon. members are MM. le Chevalier de Cessole, J. P. Farrar, P. Helbronner, P. Lory, and Joseph Vallot, who is moreover Président d'honneur for 1922.

Monthly meetings are held.

The oldest of the Alpine Clubs ventures to offer a welcome to the youngest, and will watch its career with very sympathetic interest.

MOUNT EVEREST v. CHOMOLUNGMA.

By DOUGLAS W. FRESHFIELD.

THE expedition to the Himalaya of 1921 has accomplished one remarkable feat which has as yet hardly obtained the recognition it deserves. It has succeeded where the endeavours of the Survey of India during the past sixty-six years had singularly failed. It has ascertained, on official authority, the local and native name of the highest mountain in the world. In the Tibetan passport granted to the 1921 party it is set out that the object of their journey is to be the exploration of the neighbourhood of *Chomolungma*—which, we are told, means 'The Mother Goddess of the Country.' This name, now officially confirmed, had been already obtained several years ago from separate sources by General Bruce and the late Dr. Kellas (see *The Geographical Journal*, xlix, January 1, 1917), but had failed to secure any acceptance from the Survey of India.

I recognise that it is too late, on grounds of convenience, to reopen the old controversy as to the propriety of imposing the personal name of an official however eminent on so great a natural monument. But I have to point out that the Survey of India in this particular instance is breaking one of our accepted rules of geographical nomenclature. This rule is that the right

of naming natural objects belongs to the Government of the country in which they are situated. Now the highest mountain in the world is not in British territory, and if we are to call it 'Mount Everest,' if we are to give it this pseudonym, it can only be by an exception to our own rule. I am ready, I repeat, in the circumstances not to quarrel with this concession to an established use, but on conditions. I claim that when we print on our maps the English title, Mount Everest, we shall print also (in brackets, if preferred) the true Tibetan name, Chomolungma. To do this would, it seems to me, be a becoming act; one due not only as an apology for the breach of our own rule, but also as a matter of courtesy to the Tibetan Government, to which we are all so deeply indebted.

I will venture to take this occasion to make some further suggestions which would, I believe, if accepted, prove serviceable to future geographers. West of the Arun Valley the crest of the Himalaya runs from Makalu to Gaurisankar for about fifty miles, forming an unbroken icy barrier, the lowest point in which is the Khumbu Pass, 19,000 ft. Gaurisankar is thirty-six miles west of Mount Everest. Owing to political conditions—the inaccessibility hitherto of the northern (Tibetan) and southern (Nepalese) flanks of this part of the range to Europeans—the only summits in it that have acquired distinctive names in Europe have been Makalu at its eastern extremity, conspicuous from Sikkim, and at its western extremity, seen from the vale of Katmandu, Gaurisankar. The Schlagintweits, finding the snows seen to the east from heights near Katmandu (among which Mount Everest is visible but far from conspicuous) called Gaurisankar, proposed to affix this name to the highest measured point in that direction. It was a proposal not altogether without precedents in the naming of mountains. But the 1921 Everest Expedition has proved that there is a single prominent peak known locally as Gaurisankar. This name, affixed in many atlases to Mount Everest, must therefore obviously be discarded for the great mountain. For further details and criticism on the work of the Schlagintweits I may refer to vols. vi. p. 48 and xii. p. 81, of the *JOURNAL*, and to the 'Report on the Identification and Nomenclature of the Himalayan Peaks as seen from Katmandu, Nepal,' published at Calcutta under the direction of the Surveyor-General of India in 1904.

The practical suggestion I would put forward is the following. In place of regarding this 40–50 mile range as a single mass, let us divide it into convenient groups, two or it may

be more: the Makalu group would come first, then the Chomolungma group to which the 19,000-ft. native pass, the Khombu La, would form a suitable limit. The mountains east of it might be designated the Gaurisankar group. The name Mount Everest would be reserved for the loftiest pinnacle of the Chomolungma group, just as—to take a strictly analogous case—the highest peak of Monte Rosa has been separately designated the Dufour Spitze in honour of a late chief of the Swiss Federal Staff. I may note that the Surveyor-General, General Sir A. Waugh, who was the first to propose to affix the name of his predecessor to the highest measured summit, expressly stated that it was ‘the peak alone that was so named, and not the range.’

By taking this course we might hope to satisfy the sentiment of the Survey of India and at the same time to preserve, without any practical inconvenience, the poetical local name of the Monarch of Mountains.

I should like to add that in putting before geographers my present proposal I am carrying out an urgent injunction pressed on me by a great traveller and ardent lover of mountains—the late Lord Bryce.

Looking at the importance of the exploration of Mount Everest now in hand, and to the widespread interest taken in it, it may be convenient if I take this occasion to refer your readers to pages in the past volumes of this JOURNAL which throw light on its origin and its authors.¹ The initiative must be set down mainly to the credit of Lord Curzon. In 1905, while Viceroy of India, he asked me to act as his intermediary in organising an attempt to be made under the joint auspices of the Royal Geographical Society and the Alpine Club to climb either Kangchenjunga or Mount Everest. An application was first made to the Nepalese authorities for permission to approach Mount Everest from the south; this was not favourably received, and no further step was taken until January 1907, after Lord Curzon had resigned. At that date Sir G. Taubman Goldie, then President of the Royal Geographical Society, applied to Lord Morley, who had become Secretary of State for India, for permission for a mountaineering party to enter Tibet. Lord Morley, whose avowed object was to discourage all independent travel beyond the Indian frontier, had no hesitation in replying that ‘it was not possible consistently with the interests of the policy of His Majesty’s Government for the Government of

¹ Vol. xxiii. p. 50, and pp. 466–8.

India to give encouragement or help to the exploration of Tibet.' The complete correspondence was sent to *The Times* and printed in the *ALPINE JOURNAL*.

This official attitude was maintained until 1920, when in response to a renewed application by the Club and the Society, the Secretary of State, Mr. Montagu, agreed to refer the matter to the Viceroy for decision. Lord Chelmsford, having been personally approached on behalf of the Society by Colonel Howard Bury, saw no difficulty in applying to the Tibetan Government for the required permission, which was very readily granted by the Lhasa authorities. I may note that two of the members of the present party, General Bruce and Dr. Longstaff, were among the names proposed in 1907 to Lord Morley for the expedition then projected.

IN MEMORIAM.

LORD BRYCE, O.M., F.R.S., ETC., ETC.

To put together in the space available in these pages a memorial notice of James Bryce which pretended to offer any adequate record of the innumerable activities of so long and full a life would, obviously, be impossible. I must be content to make but very brief references, whether to Bryce's public career or to his literary labours as a historian and a student of political institutions. I must limit myself to an attempt to furnish some outline of Bryce's exploits as a mountain explorer and climber, together with a few memories of him as a lifelong friend.

I first met Bryce in 1867 as one of my examiners in the Schools at Oxford. Shortly afterwards we were brought into frequent contact through my becoming connected by marriage with his friend Leslie Stephen. In 1877 he consulted me over the proofs of his 'Transcaucasia and Ararat.' Twenty years later I induced him to build a house in my woods on Ashdown Forest, and for the rest of his life we were close neighbours. During his absence at Washington I spent a fortnight as his guest at the Embassy. It was an interesting experience. In the United States Bryce was more of a popular figure than in his own country. The average American citizen—and it was greatly to his credit—discovered in the British Ambassador a simplicity of character, an honesty, a breadth of outlook, a readiness to adapt himself to, and sympathise with, his surroundings, which shone out perhaps the more conspicuously in a country where 'politician' has been used as a term of reproach. His admirable study of 'The American Commonwealth' was widely read and recognised as the best account ever given of the institutions

of the United States and of their practical working. The writer's acute perception of weak points only added value to an appreciation which was felt to be both honest and friendly. It was currently reported that Bryce was the only man at Washington who had been in every State of the Union, and his energetic travels were accepted as a crowning compliment: he was hailed as a character quite apart from the conventional type of diplomat; from an honoured guest he became a welcome friend. When his slight alert grey figure took its place at some public meeting beside the overshadowing bulk of President Taft, the audience was apt to spring to its feet and shout a greeting for 'good old Bryce.' In the States he became 'our Mr. Bryce'—the living link between the two great English-speaking Commonwealths.

Nor did Bryce's efforts beyond the Atlantic end with his Embassy. At the suggestion of some of his old political colleagues he passed his last summer (1921) in America, giving a course of lectures at Williams College, Massachusetts, on the problems of the peace, and spending the rest of his time in social meetings and discussions and what we have learnt to call Propaganda. His highest claim to the regard of posterity will be that he was a chief instrument in forging the chain of friendship between the two nations who, united, can keep the Peace of the World.

Bryce narrowly missed an earlier opportunity to influence world-politics. The incident has not been recorded and, I think, deserves to be. I had the story from his own lips. At some date in the 'seventies the then Crown Princess of Germany applied to Dean Stanley to recommend an English scholar who might furnish her eldest son with sound views on Constitutional law and history. The Dean suggested the young Oxford professor, who was communicated with and asked to consider the invitation. But some months later a message came from Berlin that the plan had had to be given up. What, if any, might have been the effect on the ex-Kaiser's career, had it been carried out, remains a matter for curious speculation.

Lord Bryce fulfilled very various tasks, occupied many distinguished posts, and received innumerable honours. But what we are most concerned with here is to recall that there was no office or honour of the many that fell to his lot that he enjoyed more at the time or liked better to recall than his Presidency of the Alpine Club (1899–1901). From that date onwards he found time whenever he was in London to be a frequent attendant and speaker at our Meetings. The concluding sentence of his Valedictory Address on quitting the Presidency of the Club gave eloquent expression to his delight in mountain travel: 'In one reflection we may rest content and grateful. No future generation will find any pleasure more pure or more intense than that which we in this our short and fleeting span of life have drawn from the days and nights we have spent among the mountains, with the silence of the snow-fields around us and the waterfalls faintly calling from the valleys beneath, in the

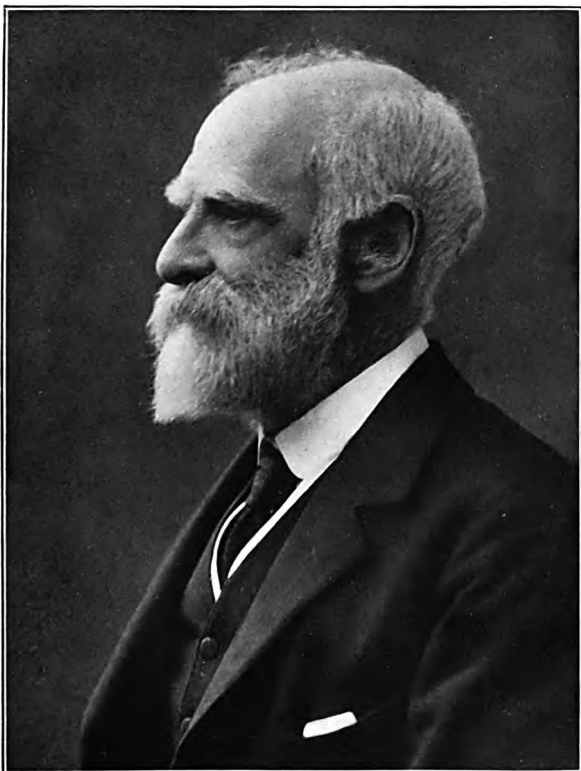


Photo J. Russell & Sons.

LORD BRYCE

solemn presence of Nature.' By dedicating to his 'Friends of the Alpine Club' his important volume on South America (1912) he offered the world a conspicuous proof of the strength of the ties that bound him to us.

It was in 1879 that Bryce joined the Club: he was proposed by C. E. Mathews, and seconded by myself. His qualification included, in the Alps, the Schreckhorn and Monte Rosa, the Pelmo and the Marmolata. To these were added the Pyrenean Maladetta and Vignemale, Hekla, climbed with Sir Courtenay Ilbert in 1872, and Ararat, ascended in 1876. The list might probably have been enlarged. Bryce also knew Appenzell, the Engadine, the Tödi, and St. Gothard districts. He took a deep interest in going over the ground of Suvarov's extraordinary campaign in 1799 in the latter ranges. In 1866 Bryce persuaded Leslie Stephen, who, unlike his companion, had no aptitude for travel apart from walking and climbing, to go with him to the Carpathians. Their adventures are recorded in a chapter in the first edition of 'The Playground of Europe,' where the range is condemned as only a loftier and wilder Jura.

In 1883 Bryce delivered to the Club an 'Address upon North America as a Field for Mountaineering.' It never appeared in the pages of the JOURNAL. Possibly it was never committed to writing.

Bryce was an agile and untiring mountaineer, but in his world-wide travels he was wont to combine ascents with more general objects: he took his peaks as they came—they were like fences in a day's hunting—the most enjoyable incidents in journeys which were crowded with objects and interests, picturesque, historical, and political. But he never came in sight of mountains without wanting to learn as much as possible of their characteristics and, if time and opportunity allowed, to climb them.

In *Who's Who* Bryce put down 'mountain-climbing' as his favourite recreation. On the last occasion when he took the Chair as President he told the Club: 'He yielded to no one in his love for the mountains. He had always loved them. When he was twelve years old, long before he had crossed the English Channel, he knew most of the peaks of the Bernese Oberland and the Pennines from pictures and descriptions and could have given the heights of many of them, and he had already begun to learn climbing among the hills of Scotland and Ireland and the Lake Country.' By his *Access to Mountains* Bill he made a persistent if unsuccessful effort to break the barriers set by wealthy sportsmen round his native Highlands. Vittorio Sella's splendid photograph of Siniolchum presided over his study, and Ararat and Fujiyama found themselves in company with Roman ruins and Norman churches on his walls. Bryce's taste for mountains was comprehensive: he liked any broken ground, from the Forest Ridge to the Himalaya. As Irish Secretary he was wont to lead his panting subordinates up the steep sides of Croagh Patrick or Croaghnaun. The junior members of his staff at Washington found it difficult to keep pace with a Chief whose idea of a holiday

was not a fashionable watering-place but a house in the White Mountains.

Two years ago I was staying with friends at Mount Desert Island on the coast of Maine, where a little crowd of rocky hills, the only ones on the east coast of the United States, fronts the Atlantic. Knowing Bryce had spent a summer there while Ambassador, I made an effort to climb the highest, but when I got home I found he had climbed them all. He affected, I think, rock-scrambles rather than long glacier expeditions, and he had, consequently, a great liking for the Dolomites and the Eastern Alps. In 1889 he went up the Terglou, and was indignant at the way the final ridge had been 'improved' for the convenience of German-Austrian Klubists. It is not easy to trace his more remote scrambles, but I may give specimens: At the Cape he climbed Table Mountain, in Basutoland, Machaca, a summit of 10,000 ft., and in Hawaii, Mauna Loa, 13,675 ft.

Bryce's travels may be said to have compassed the habitable globe. While he was our President it was constantly noticed that whatever distant range the paper read might refer to, the chairman was invariably able to illustrate it by his personal experiences in the same region. It would be hazardous to attempt a complete catalogue of these journeys—a lifelong wander-year! The following list may serve to indicate their extent. Bryce had repeatedly visited the whole of Europe, from Iceland, the Lofoten Islands, and the North Cape, down to the Balkan Peninsula and Greece; Sicily (he climbed Etna), Corsica and Majorca, Spain and Portugal. In Africa he knew Morocco, Algeria, Tunis, and Egypt, Cape Colony and the Transvaal and Rhodesia; in Asia, Palestine, Armenia, Transcaucasia, India, China, Japan, Siberia. Of North and South America there were few parts he was not familiar with. In 1883 he made an attempt on Mount Rainier; his travels extended from Vancouver and the Rockies to the Straits of Magellan. The West Indies and Mexico were the object of a special journey. Another took him to Hawaii and Samoa, and on to Australia, New Zealand, and Tasmania. Yet his passion for wandering was not wholly satisfied. When hindered by time from carrying out as thoroughly as he would have liked his explorations in the Andes, he interposes the reflection, 'Renunciation is the hardest part of travelling.'

Bryce's energies, physical and mental, knew no decay. In 1913 he was scrambling among the pinnacles of Myogi-san in Japan, or leaving the Trans-Siberian railway for a long drive in a Russian *tarantass* in order to get a glimpse of the Altai. Two years ago I was roaming with him and Mr. Montagnier on the heights behind Montana, or resting, with the Pennine Alps in full view, while he quoted line after line of Homer to illustrate the Greek sentiment for landscape. In 1920 he made an extensive tour in Morocco. Last autumn he walked six hilly miles to attend an Armistice Day celebration in Sussex.

Bryce's contributions to Alpine literature were, like his peaks, mainly incidental. *The Times* was wrong in calling his 'Trans-

caucasia and Ararat' 'an account of mountaineering.' It is the summary of the impressions of a well-equipped observer in the Transcaucasian Provinces.

He was unable to carry out a projected visit to Svanetia, and all he saw of the Caucasus was the passing glimpse of Kasbek vouchsafed to travellers on the high road. The chief incident of his drive through the Darial was an encounter with two Russian ladies, one of whom took him for a poet on the ground that he paid so much attention to the scenery. Bryce reveals that he kept up the character by writing a sonnet—unfortunately lost to the world—to her cigarette!

The volume overflows with general information, relieved, as I have shown, by lighter touches. The ascent of Ararat is a digression. But the digression is what caught the public ear. For Bryce had a singularly dramatic story to tell, and he told it admirably. His long, solitary climb after his companions had deserted him 5,000 ft. below the top—from 12,000 to 17,000 ft.—was a singular feat of endurance and indomitable pluck. He had to plod for hours among shifting mists up the interminable banks of loose rocks that in summer form the sides of the great volcano before he found himself at last on the double summit and able to overlook the vast panorama spread out from one of the most isolated of mountain tops. His description of the view is remarkable for its grasp of detail, its feeling for atmospheric effects, and the wealth of historical associations called up in the writer's well-stocked memory.

Amongst these associations Bryce did not leave out the Bible story. 'Ararat,' as a Lord Mayor who knew nothing else about Armenia once remarked at a Mansion House meeting, 'is a Bible mountain.' Bryce rose to the occasion, and wrote nothing that need disturb the mind of a Lord Mayor or of an Armenian patriarch. He played at some length, and most delicately and warily, with the legend that identifies Ararat as the scene of Noah's disembarkation. His wariness, indeed, was so thorough that it led subsequently to unforeseen complications. While we both had chambers at Lincoln's Inn, I received a call from a respectable visitor who came to beg me, as one who had himself attempted to climb Ararat, to help him in getting up a Company to disinter the Ark, which, he argued, must obviously be reposing intact, buried in the snowy hollow between the two summits. I promptly suggested that he should go round and consult my friend, who had far more intimate knowledge of the precise locality. Nor was this to be the last of Bryce's embarrassments: he had described picking up a large piece of wood high on the mountain (doubtless the relic of a previous Russian ascent), and in a rash moment added that he 'would not undertake to say it was not gopherwood.' Many years afterwards, when Ambassador at Washington, he frequently got letters from some Western town begging for the smallest chip from this invaluable relic for the local museum.

In his volume of South American travel Bryce gave a series of vivid pictures of the scenery of the Andes of Peru and Bolivia : the 'chilly glitter' of the blue waters of Lake Titicaca ; the great range of the Cordillera Real culminating in the peak of Illampu (or Sorata, 21,490 ft.), attacked by Sir Martin Conway ; the bleak, dusty landscape of La Paz ; the Valley of Desolation through which the Trans-Andean railway climbs to the Cumbre Pass ; the green pastures and shaggy woods of southern Chili, a region that forms a delightful contrast to the volcanic deserts farther north. The writer's large experience enabled him to draw a comprehensive comparison between the scenery of the great snow ranges of the world, Alps, Andes, and Himalaya. His remarks on the effects of altitude are also interesting. His personal experience goes to confirm the recent observations of others that the rise from 8,000 to 14,000 ft. is often more felt than that from 14,000 to 20,000 ft.

Next only to Lord Bryce's love of mountains was his interest in Botany. His first work was a 'Flora of the Island of Arran,' 1859. From South Africa he brought home fifty-four specimens, eleven of which were pronounced at Kew to be plants new to science. During his visit to Peking (1913), the attachés at the British Legation, who were prepared to answer questions on Chinese politics, were taken aback by being examined as to the local flora. In his walks on Ashdown Forest he would frequently stoop to pick some insignificant wanderer from a more northern habitat. In a letter written to a Sussex correspondent the week before he died he expressed his hope to be able to compile a Flora of the Forest.

This was by way of a pastime. He had more serious work in prospect. During the past winter he was busy in preparing for the Press a volume of 'Memories of Travel,' dealing not so much with descriptions as with the reflections suggested by the many scenes and sites he had wandered amongst. On the last day of his life he was engaged on the chapter on Troy and Ithaca. This congenial task completed, he had planned a visit to Rome in May to collect material for a work on Justinian.

Nowhere will Lord Bryce's frequent presence be more missed or his memory more affectionately remembered than among his old 'friends of the Alpine Club.' In friendship he was pre-eminent. A complete absence of self-assertion—no one was ever more genuinely modest in referring to his own part in affairs or letters—an eagerness in pursuit of knowledge that was more than equalled by readiness to impart it, a kindly and generous judgment, a close interest in the lives and pursuits of others : these were among the qualities which endeared him to all his intimates. There was no limit to his practical helpfulness. Despite the many calls on him, he would always find time to attend a Meeting or to write a review, if by so doing he could serve a purpose or help a friend. During my Presidency of the Royal Geographical Society I had often cause to be grateful for his ever ready help. While busy on the proofs of his great work on Democracy he had always a willing ear for any

question concerning de Saussure, and he was sensibly annoyed when the editor of a provincial newspaper, by whom he had been asked to review my book, ventured to cut out the portion in which he had dealt at some length with my treatment of Genevese politics in the eighteenth century.

In Lord Bryce's career we rejoice to recognise a type of a full and complete life. Fortunate in his marriage, he found a wife who shared his tastes and his travels. Acknowledged by all a fine scholar, a sound lawyer, a great historian, and a brilliant writer, as a statesman he was esteemed and trusted by his political colleagues. Translated to the most important of our embassies, he returned home amidst universal applause to an old age in which neither his physical nor mental powers showed any sign of abatement. He was so eminently alive that his death, even at eighty-four, came as a shock to the younger generations. Nothing remained to round his life but the peaceful passage into the Unknown which completed it.

The epitaph written by Cowley on another famous ambassador, Sir Henry Wotton, may be applied even more exactly to Lord Bryce :

' On earth he travelled often ; not to say
He'd been abroad, or pass loose Time away.
In whatsoever Land he chanced to come
He read the Men and Manners, bringing home
Their Wisdom, Learning, and their Pietie
As if he went to Conquer not to See. . . .
And when he saw that he through all had past
He dy'd, lest he should Idle grow at last.'

D. W. F.

EDWARD HOPKINSON.

BETWEEN Members of the Alpine Club it may rightly be assumed that a feeling of comradeship—of common interests and mutual understanding—exists which makes it possible even for brother to write of brother in the pages of the JOURNAL with less reticence than he would naturally observe in any other publication. I cannot therefore resist the suggestion made to me to give some account of the activities as a mountaineer of my brother Edward, who has just passed from among us. He was the youngest of four who had been Members of the Club for very many years. Charles, Edward and I were elected in 1887 ; John, the eldest, was already a Member, and his son, Bertram, who was killed while flying shortly before the end of the War, had joined a few years later. Albert, the fifth brother, has been elected as a Member of the Club this year, and he and I alone remain of the five who all shared in the love of the mountains which they had inherited from their parents.

Edward Hopkinson was born in 1859, and from his earliest years he showed what was perhaps the most marked characteristic of his life—vigour in undertaking any work which presented itself, and in

carrying it to successful accomplishment and capacity for leadership—the power to act himself and to direct and stimulate others. To a nature like his, nothing seems more attractive than a difficulty, something to be faced and overcome, calling into action full energies of body and of mind. This trait appeared specially in the manner in which he solved practical problems arising in the course of his work, and it was this, coupled with an intense love of nature in its wilder forms, that naturally made him an enthusiastic mountaineer. At Cambridge he was remarkable both for physical and mental energy. He was an exceptionally fine swimmer and rowed stroke in the Emmanuel College boat. At the same time he was reading hard in mathematics and science, and obtained a high place among the wranglers, becoming eventually a Fellow of his College. But it was afterwards, in the application of science to constructive work and in the carrying out of new undertakings that his special gifts found their full realisation. He was a true pioneer in electric construction. The first electric railway in the United Kingdom, from Bushmills to the Giant's Causeway, was made under his direction on behalf of the firm of Sir William Siemens & Co. He planned and completed a second electric railway near Newry, and not long afterwards he designed the electrical plant of the first tube railway in London and supervised its execution. This undertaking of the City and South London Company, which was opened in 1890, was the beginning of the system which has since been so widely extended. But the work he thus accomplished will be more fully recorded elsewhere.

In the early days of climbing in the British Isles it was our habit usually to take our climbs as it were by chance. If a ridge or a gully looked attractive it was the natural thing to go for it, and in those days records were not generally published even if any were kept. No doubt a few special climbs which have since been accomplished by more scientific methods might then have been voted impracticable. Some idea of Edward's keenness as a climber may be gathered from the fact that more than forty years ago he and his brother John made their way one evening down the rocks on the E. face of Tryfaen, reporting the climb as stiff; but by which of the various routes now mapped out they descended it is impossible to say. Later, they, in company with Charles and Bertram, explored new routes up the N.E. face of Ben Nevis, referred to in vol. xvii., p. 520, of the JOURNAL. Edward knew almost all the climbs in the Lake District, and he built the cairn which bears his name in Climbers' Manuals, marking the lowest point then reached in the direct descent of the Scafell Pinnacle. He was also one of those who made some of the first ascents, including the Central Chimney, on Doe Crag, and was a leading spirit in an amusing mixed feat of engineering and gymnastics which surmounted the overhanging chockstone in the Great Gully.

Between 1889 and 1898, either with one of his brothers or his brother-in-law, W. N. Tribe, he was frequently climbing in the Alps,



EDWARD HOPKINSON.

sometimes with guides and sometimes without, and he was one of the party who, without guides, made the first ascent of the middle peak of the Fusshörner and the first descent of the S.E. arête of the Nesthorn.

After the fatal accident of 1898, neither he nor his surviving brothers climbed much in Switzerland for some years, but he usually spent his holidays abroad and had some mountain expeditions in Norway, both in the Horunger Group and in the Romsdal, being, on his last visit there, one of a party of three who ascended the Vængetind, and whose united ages amounted to close on 180 years. His interest in travel was not confined to the mountains. Partly for business purposes and partly for pleasure, he visited Canada, the United States, Russia, North Africa, Spain, Italy, Greece, Palestine, and Egypt. And finally, in 1917, although his health was far from good, he accepted the invitation of the Government to become a Member of the Commission of Inquiry into Indian Industries, a position for which his experience as a Director and sometime Manager of the great engineering firm of Mather & Platt, Limited, specially fitted him. Though mountaineering was then impossible for him, he was able to enjoy a distant view of Mount Everest. It was a bitter disappointment to him that the state of his health prevented him from accompanying the Commission to India again in the following year and sharing in the completion of its work.

But of all his travels, I believe that he had the keenest interest in a few days' journey through Palestine, perhaps the last in which he seemed to be enjoying really vigorous health. A long ride from Jenin to Nablous, with a visit to some ancient sites, was a full day's work for most travellers, but on arriving late in the afternoon he rushed up Mount Ebal alone in time to secure the grand view from the summit. Rising early next morning, by riding over the hills, we performed our vow to reach Jericho before night. The picture of him galloping ahead over the hills of Samaria or leading his horse down the steep defile into the Jordan valley as darkness came on will ever be vivid in memory. The zest with which he entered into and enjoyed everything—natural beauty, historical associations, human life—in the countries he visited made him a most delightful travelling companion. He was ever eager to see and to understand all that these could reveal to him, and ever ready for some fresh expedition or novel experience.

As years advance, as life becomes less active and the allotted span before us must inevitably be short, we naturally turn to the happy memories of bygone days and live more and more in them. They grow more vivid, and the line which separates the present from the past becomes almost obliterated. So we try to keep our old companions with us still and to traverse again together in thought the eternal mountains which awakened the love of our boyhood and remain as a source of perennial happiness in the latest days of life.

ALFRED HOPKINSON.

There was a certain distinction in Edward Hopkinson's appearance and manner that left a vivid first impression. Few could fail to remember the charm of his greeting, his curly hair and his keen face alive with an ever eager intelligence. Knowledge only strengthened that first impression and added to the attraction. He enjoyed helping others and he enjoyed solving their difficulties. Even during his long illness he was always ready to help his friends with his advice and sympathy. One has written :

'He was very friendly and hospitable to me, and behind the gentleness I could see the roaming, eager, planning mind and the grip of his will.'

We shall ever miss the warm welcome he gave to his friends in his own home. But we must feel that such an active spirit and one so essentially alive could only find lasting rest,

'Indulging every instinct of the soul

There, where law, life, joy, impulse are one thing !'

LAWRENCE PILKINGTON.

WILLIAM A. BAILLIE-GROHMAN.

By the death of Mr. W. A. Baillie-Grohman the Alpine Club loses one of its most outstanding personalities. His father, who resided largely in England and was a great sportsman, owned St. Wolfgang Castle and another equally fine estate in Austria. His mother was a cousin of the Duke of Wellington. The boy went to school in England, but of course spent much time in Austria, where his family were in close relation with the Austrian Court. One of his earliest recollections was of sitting on the knees of the youthful and beautiful Empress Elizabeth. He took to climbing from childhood as a duck takes to water, and at the age of six escaped from confinement by what appeared to be a perilous rock-climb. He was likewise a great swimmer. Between 1871 and 1876 he climbed most of the Tyrolese mountains, making the first winter ascent of the Gross Glockner in 1875. He never kept any record of his climbs, and the same is unfortunately true of what he did in the Rocky Mountains and the Selkirks, in which region he spent a large part of his time during eighteen years. It was said that the mountain named after him in the Kootenay district was so called because it was the only peak thereabouts which he had not climbed. After his father's death his mother purchased the beautiful and historic castle of Matzen, which he in turn inherited from her. It is a castle with a tower of Roman foundation, and containing work of many ages. It is situated overlooking the ancient highway between Italy and the north, over the Brenner and down the valley of the Inn. From 1893 onward this was his home and one of his main interests. It became filled with well-selected and rare examples of mediæval furniture and works of art. Tyrol, thenceforward, was the scene of his sporting exploits and the subject of his historical research.

He was always an enthusiastic sportsman as well as a great traveller. Alike in the Rockies and the Alps he pursued every variety of game, preferably in the most difficult country. It must have been a disappointment to him when failing health closed his bag of chamois at the number of five hundred and ninety-nine. Just one more would have been such a satisfactory trophy. But Baillie-Grohman was much more than a sportsman. He not only loved the mountains, but he loved the country out of which they rise and the people inhabiting it. His presence in any neighbourhood was beneficent to the peasantry, by whom he was always greatly beloved. His last years were spent in the attempt to relieve the distress among the Tyrolese resulting from the war, and his labours in that direction no doubt shortened his life. One of his many interests was the history of sport; he collected upward of four thousand books and prints illustrating that history. He published several works on the same subject, editing, for example, the Hunting Book of the Emperor Maximilian, and the oldest English book on hunting, 'The Master of Game.' For the latter President Roosevelt wrote an introduction. A common interest united the two men in a close intimacy. A writer in *The Times* cites a letter written by Roosevelt to Baillie-Grohman in which he said: 'When I was in the Kootenay country I heard much of you, often in an exasperating fashion, for I ran across two men who had been out with you and who, whenever I began to make bad weather of it over the slide rock and through down timber, would begin to recite your feats as a walker and a hunter.' Other very interesting books written by Baillie-Grohman were, 'Tyrol and the Tyrolese,' 'Gaddings with a Primitive People,' 'Camps in the Rockies,' 'Sport in the Alps,' 'Fifteen Years' Sport and Life in Western America,' and 'Tyrol, the Land in the Mountains.' These books not only contain excellent adventure and much accurate observation, but in several cases embody considerable historical research. 'Tyrol, the Land in the Mountains' is one of the best books ever written on that interesting country, and deserves a long survival. No traveller in Tyrol should fail to read it. It opens the doors of *Schloss* and cottage, and makes the past and its people vividly alive. Baillie-Grohman possessed what I can best describe as a massive personality, full of energy, originality, and enterprise. He was little influenced by the opinion of others, though much by their reason. He abhorred society, and loved his many friends. With them he abounded in interesting talk, wide reminiscence, freedom from prejudice, and quick understanding. He was tenacious in his own opinion, determined in conduct, but charitable to others, and warmed by a thoroughly kind heart. Alike in intellect and character, he was a strongly defined individual. Alpine climbers, perhaps more than any other class of men, tend to develop definite individualities. It will probably be long before a ruggeder and a kindlier specimen of the type arises among the membership of the Alpine Club.

M. C.

THE ALPINE CLUB LIBRARY.

THE following additions have been made to the Library :—

Club Publications.

- Akad. Alpen-Verein, Berlin.** xviii Jahresbericht. 1921
 $9\frac{1}{2} \times 6\frac{1}{4}$: pp. 24; plates.
 Neue Turen : *R. Wolter*, Gr. Löffler W.-Grat : *G. Künne*, Gr. Ramol-
 kogel N.z. N.W.-Grat : Nasse Wand Hauptgipfel, Oestl. Hennesiegel-
 kopf.
- **Alp.-Verein, Innsbruck.** Bericht 1920–21. 1921
 9×6 : pp. 32: plates.
- Alpenkränzchen Berggeist München.** Zwanzig Jahre, 1900–1920. 1921
 $9 \times 6\frac{1}{4}$: pp. 40.
- Alpine Club of Canada.** The Gazette. December 1921
 7×5 : pp. 32.
- The British Ski Year Book, Vol. i, no. 2.** 1921. 5/-
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 312: plates.
- C.A.F. La Montagne.** Revue mensuelle : 17^e année. 1921
 9×6 : pp. 228: ill.
- Among the articles are :—
P. Helbronner, Description géométrique des alpes françaises : *H. Vallot*, Aigs. Rouges : *P. Lory*, Rochers de Génepy : *H. Bregeault*, Premier atterrissage du Montblanc.
- **Alpes Maritimes.** Annuaire 1916–1920. 1921
 $8 \times 5\frac{1}{2}$: pp. 166: plate.
- Guides et porteurs brevetés au Juin 1921.
 1. Région des Alpes.
 2. Région des Pyrénées.
 Two large sheets.
- C.A.S. Echo des Alpes, 57^e année.** 1921
 $9 \times 5\frac{1}{2}$: pp. 504: ill.
- Among the articles are :—
H. Correvon, Par monts et par vaux : *J. Gallet*, Faldumrothhorn : *L. Maquelin*, Pointe Percée du Reposoir : *S. Miney*, Le Doigt et le Trou de Pte Percée : *E. Thomas*, Tour de la Dent Blanche : *A. de Roulet*, Les Dolomites : *R. de Girard*, Alpes fribourgeoises : *E. R. Planchet*, Première descente de l'arête N.E. du Balfrin et première ascension de la Pte Marie-Christine : *E. Correvon*, Val des Dix : *C. Topali*, Aigs. Rouges d'Arolla : *E. Wyss*, Première descente de l'arête Dent d'Hérens-Cervin : *O. Thiel*, Alpinisme et aviation.
- **Jahrbuch.** 54. u. 55. Jahrg. 1919, 1920. 1920–1921
 10×7 : pp. 268: 194: plates.
- 1919 *G. Mayer*, Montblanc : *G. I. Finch*, Monte-Rosa : *H. Koenig*, Fiescherhörner : *W. Derichsweiler*, Das Saiental : *E. Imhof*, Splügener Kalkberge.
- 1920 *Duhamel*, Massif de la Vanoise : *H. Müller*, Urnerbergen : *O. A. Hug*, Tödi : *H. Fischer*, Taufrosch.
- **Liederbuch für Schweizer Alpenklubisten.** Chansonnier du C.A.S. Herausgegeben vom Zentral-Komitee. Aarau, Trüb, 1921
 $6\frac{1}{2} \times 4$: pp. viii, 116.
- **Lindenberg.** Gedenkschrift 1894–1919. 1919
 $8 \times 5\frac{1}{2}$: pp. 18.
- **Randen.** Program 1922.
 $5\frac{1}{2} \times 4$: pp. 3: ill.

- C.A.S. Randen. Statuten u. Bibliothek-Reglement.** 1921
 8 × 5½: pp. 8.
- **Toggenburg. Die ersten 50 Jahre 1870-1920.** 1920
 9 × 6: pp. 79: plates.
- **Weissenstein. Bericht für die Jahre 1914-1918.** 1919
 8½ × 6: pp. 62: ill.
- Cambridge University Mountaineering Club. Rules, MS.** 1921
- D.u.Oe.A.-V. Allgäu-Immenstadt. Jahres-Berichte 1914-15: 1916-17: 1918-19: 1920: 1921.**
 9 × 5½: pp. 4 each.
- **Bayerland. Mitteilungen d. Sektion. Der Bayerländer.** Nr. 1-13.
 9½ × 6½. 1914-1921
- **Füssen. Jahresberichte 1914-1920.**
 8½ × 5½: pp. 15.
- **Garmisch-Partenkirchen. Jahresberichte 1919, 1920, 1921.**
 9 × 5½: pp. 12, 16, 15.
- **'Die Reichensteiner.' Zum zwanzigjährigen Bestand. Kriegsberichte über die Sektionsjahre 1914 bis 1918 und Jahresbericht 1919.**
 9 × 6: pp. 111. Wien, 1920
 Erste Begehungen: *J. Mühlmann*, Gr. Koppenkarstein: *O. Täuber*, Kl. Murfraitturm; (allein) Gr. Murfraitturm: *L. Schickl*, Steigkogel.
- **Jahresbericht 1920.** 1921
 9 × 6: pp. 34.
 Erste Begehungen: *R. Borile*, Kantenbrunnsp., Pfeifer: *K. H. Grunwald*, Waseneck; Zwerfenberg: *L. Schickl*, Westl. Törleok: *A. Horeschowsky*, Admonter Reichenstein: Oedsteinkarturm N.-Grat: *L. Obersteiner*, Torstein; Zahringkogel; Almkogel N.-Grat: Hohe Weichsel O.-Wand; Mittleralpenturm W.-Wand; Watzesp.
- **Jahresbericht 1921.** 1922
 9 × 6: pp. 34.
 Erste Begehungen: *J. Czernilofsky*, Kantenbrunnsp. O.-Wand: *H. Horeschowsky*, Gr. Buchstein S.O.-Wand: *L. Landl*, Gr. Beilsteinv. W.: *L. Obersteiner*, Messnerin W.-Grat: Ampferkogel W.-Grat: Mittl. Eiskastenkopf S.O.-Grat: Puikogel, N.W.-Grat: Rotchliedgrat: Schwabenkopf N.O.-Grat: Sonnenkogel-Signalgipfel S.W.: *K. Reichl*, Mittl. Walhamsp., S.O.-Grat: *E. Sporrer*, Fuscherkarkopf-Freiwanddeck: *K. H. Grunwald*, Häuselsp.: *J. Ross*, Grubensp. N.-Wand. Oestl. Wildersender S.-Wand: *E. Melecki*, Glocknerwand-Grossglockner.
- Foreningen til Ski-Idraettens fremme—Aarbok. 1921.** 1921
 8½ × 5½: pp. 155: plates.
- **Contains, pp. 110-119, S. Koenig, Med ski paa Kilimandjaro.**
- Ladies' Alpine Club. List of members, expeditions, etc.** 1922
 5 × 4: pp. 28.
- Mazama. Vol. vi. No. 2.** December 1921
 10 × 7: pp. 88: plates.
 Articles on Mount Thielsen: Crater Lake: Mount Hood: Mount Adams, etc.
- Mountain Club of S. Africa. Annual No. 24.** 1921
 10½ × 6: pp. 146: plates.
 The articles are:
G. Londt, Buffel's Dome, first frontal ascent: *J. W. Fraser*, Waaihoek traverse: *Mrs. Alderman*, Montaux-Sources: *G. Londt*, Little Einterhoek: *S. C. Morton*, Ascension Buttress: *T. Mackenzie*, La Caille as mountaineer: *E. A. Buchier*, Ascent of the Witteberg: *J. A. Whitworth*, Jonker's Hoek Ridge Peak 'A': *C. Ross*, Mt. Kindukop: *R. F. S. Dewdney*, Kenya: *F. Berrisford*, Waaihoek Peak: *A. J. Conacher*, First frontal ascent Spitzkop: Connaught Face.

- The Mountaineer**, Vol. xiv. Glacier Peak. November 1921
 $10\frac{1}{2} \times 7\frac{1}{2}$: pp. 90: plates.
- Norske Turistforenings Aarbok**. 1921
 11×8 : pp. 190: plates.
 Contain among other articles:—
F. Schjeldrup, Nybestigninger i Nordland: *R. Ødegaard*, En tur over Torfinnstindene: *H. Tønsberg*, Bestigninger i Troms fylke i 1920: *H. W. Ahlmann*, Et par braeer indenfor Skagastølsmassivet: Kort veiledning i braevandring og klatring.
- Oxford and Cambridge Mountaineering** 1921. Published for the Mountaineering Clubs of Oxford and Cambridge Universities.
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 92: plates. Cambridge, Marshall, 1921. 4/-
 Contains:—
T. D. Longstaff, Expedition to Spitsbergen: *R. G. Collingwood*, Ruskin and the mountains: *A. Lunn*, The foehn: *A. D. Godley*, Age for retirement: *B. L. Hallward*, Climbs in the alps in 1921: *J. M. Wordie*, An arctic climb: *M. H. Slater*, Tour in the Pyrenees: *R. Greene*, Oberland from end to end: Climbing in Cambridge.
- The Pinnacle Club** 1921. Rules, members, etc. 1921
 $4\frac{1}{2} \times 2\frac{1}{2}$: pp. 11.
 'To foster the independent development of rock climbing amongst women.'
- Rucksack Club**. Rules, List of members. 1922
 $4\frac{1}{2} \times 2\frac{1}{2}$: pp. 42.
- Scottish Mountaineering Club Guide**. Vol. i. Section A. Geology, Meteorology, Botany, etc. October 1921. 7/6
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 144: plates.
- Soc. escursjonisti milanesi**. Le Prealpi. Rivista mensile. Anno 20. 1921
 $9\frac{1}{2} \times 7$: pp. 200: ill.
 Among other articles:—
V. Bramani, Torre Delago, Gran Sasso: Ascensioni al Monte Rosa: *B. Meriggh*, Cresta Segantini: *G. M. Sala*, Alla conquista dell' Ortler: *F. Meschini*, Bernina.
- New Works.*
- de Ambrosis, Delfino**. Appunti di topologia ad uso dei mappatori. Circhi glaciali. In L'Universo, Firenze, v. 3, num. 1. Gennaio 1922
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 1-13: maps, plates.
- de Antonio, Carlo**. La diramazione di Monte Antela e la pianura di Marengo. In L'Universo, Firenze, t. 3, num. 1. Gennaio 1922
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 13-31.
- Baedeker, K.** Switzerland. Handbook. 26th edition. Leipzig, Baedeker; London, Unwin, 1922. 15/-
 $6\frac{1}{2} \times 4$: pp. xxxvi, 537: maps.
- Baker, Olaf**. Shasta of the Wolves. London, Harrap (1921)
 $7\frac{1}{2} \times 5\frac{1}{2}$: pp. 276: ill.
 A volume of fiction about the mountains round Shasta.
- Boegan, Eugenio**. La grotta di Trebiciano, 1910 al 1921. Trieste, 1921
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 43: ill.
 Ex 'Alpi Giulie' 1921.
- Deposcheg, Josef**. Die Zugspitze. Ersteigungs Geschichte, Orographie, Klima und Touristischgeolog.-botan. Führer. Garmisch, Adam, 1921
 $7\frac{1}{2} \times 4\frac{1}{2}$: pp. 168: ill.
 This work quotes from MS. an account by Lt. Naus of the first ascent of the Zugspitze by him on August 26, 1820.
- Everest, Mount**. Catalogue of the exhibition of photographs from the Mount Everest Expedition, 1921. Alpine Club Hall, January 9-28, 1922.
 $8 \times 5\frac{1}{2}$: pp. 24: plates. 1922

- Farrer, Reginald.** The Rainbow Bridge. London, Arnold, 1921. 21/-
8½ × 5½: pp. x, 382: map, plates.
- France.** Ministère de l'Agriculture. Direction générale des grandes forces hydrauliques (Région du sud-est). Compte rendu et résultats des études et travaux au 31 Décembre, 1917. Tome ix, et annexes i et ii. 1920
11 × 7½: pp. 490.
- France.** Hôtels de la France. 1922
7 × 5: pp. 289.
- Gillman, C., and Nason, P.** Ascent of Kibo. In *Daily Mail*, London. 20 January, 1922
- Godefroy, R.** Les montagnes de Manigod. Chambéry, Dardel, 1921
9½ × 6½: pp. 37: ill. Extrait, avec corrections, du No. 3 de la Revue Alpine, 1921.
- Gos, Charles.** Propos d'un alpiniste. Lausanne, Genève: Payot, 1922
7½ × 4½: pp. 239.
Contains:—
Le Cervin: Vainqueur du Mont-Blanc: Alpoys Pollinger: Pater Knubel: J. Truffer: Josef Lochmatter, etc.
- Granö, J. C.** Les formes du relief dans l'Altai russe et leur genèse. Etude morphologique. Helsingfors, Arfvingar, 1917
10 × 6½: pp. iv, 127: map, plates.
Reprint from Fennia 40, No. 2. Contains bibliography.
- Helbronner, Paul.** Description géométrique détaillée des Alpes françaises. Annexe du tome second. Paris, Gauthier-Villars, 1921
An atlas containing large coloured plates of Mont Blanc.
- Hints to travellers scientific and general.** 10th edition. Revised and corrected from the ninth edition for the Council of the Royal Geographical Society by E. A. Reeves. London, R.G.S., 1921. 21/-
6½ × 4½: pp. xv, 470: vii, 318: ill.
- Inaka, or Reminiscences of Rokkasan and other rocks.** Collected and compiled by the Bell Goat. Vol. xv. Kobe, Japan, 1921
9 × 6½: pp. 103: plates.
Among other articles, the following:
A. V. Gulick, Diamond Mountains of Korea: W. H. Elwin, Spirit of the mountains.
Presented by H. E. Daunt, Esq.
- Jové.** Avec les chasseurs d'isards. In Pau-Pyrénées, 2^e année, p. 55. Reprint from *L'Illustration*, 17 Sep. • 5 Novembre, 1921
- Keller, C.** Schweiz. Junk's Natur-Führer. Berlin, Junk, 1921
6½ × 4½: pp. 475: ill.
Geology, botany, fauna—in general and in particular districts.
- Kilian, W.** Aperçu sommaire de la géologie, de l'orographie et de l'hydrographie des Alpes dauphinoises. 2^e éd. Ex. Annales Univers. Grenoble, t. 31, No. 1, 1919. Grenoble, Allier, 1919
10 × 6½: pp. 100: ill.
- Lantern Slides.** Catalogue published by Wilson Brothers of Aberdeen. 1921
8½ × 6½.
Accompanying this are descriptive pamphlets, An Ascent of Monte Rosa, Winter at Davos, Through the Bernese Oberland, St. Gothard Railway.
- Levy, Friedrich, Hag. v.** Ostalpine Formenstudien. Berlin, Borntraeger, 1920–21
10 × 8½: ill., maps.
Abt. 1, Hft. 1. Diluviale Talgeschichte des Werdenfelser Landes, von Dr. Friedrich Levy, pp. 192. M. 30
Abt. 2, Hft. 1. Die Formen der Eiszeit im Ankogelgebiet, von Dr. Nikolaus Creutzberg, pp. 102. M. 24
Abt. 3, Hft. 1. Zur Morphologie d. Lessinischen Alpen, von R. v. Klebelsberg, pp. 65. M. 45

- Lindner, Werner.** Vom Reisen und Wandern in alter und neuer Zeit.
 $8\frac{1}{2} \times 6$: pp. 144: ill. Berlin, Fricke-Verlag, 1921
 Reproductions of many interesting old prints and an anthology on travel.
- Lüther, C. J.** Die Aufnahme der Schneelandschaft und des Wintersportes im Gebirge. München, Perutz, 1920
 $6 \times 4\frac{1}{2}$: pp. 12: 16 plates.
- Mazé, Jules.** La grande montagne. Paris, Bloud et Gay, 1921
 $8\frac{1}{2} \times 6\frac{1}{2}$: pp. 140: plates.
 A book on Mont Blanc. Good photographs.
- Mercanton, P. L.** Application de la vision stéréoscopique au contrôle des glaciers. In Bull. Soc. vaud. Sc. nat. t. 54. 1921
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 77-8.
- Mont Blanc.** Annales de l'observatoire, t. vii. Paris, Steinheil, 1917
 11×9 : pp. vi, 328.
 Contains:
H. Vallot, Quelques cartes modernes du massif du Mont Blanc:
J. Vallot, Correction de l'erreur diurne dans le calcul des altitudes par le baromètre: *G. Kuss*, Mode d'action des cures d'altitude.
- Mount Everest Expedition.** In Geogr. Journ., vol. 58, No. 4, q.v. pp. 276-283: plates: Oct. 1921
- New Zealand.** Tourist Department (Annual Report). 1921
 'Though this has not been a good climbing year, a few high ascents have been successfully accomplished, the most difficult one being the ascent of Mount La Perouse by Mr. H. Chambers. Though it is the second ascent of the mountain, it is the first time it has been climbed from the eastern side, which meant a very long climb, and a traverse of two other peaks before the summit could be reached.'
- Nolli, Anna.** Dall'alto. Editio d. Soc. oper. oesours. Milano. 1921
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 28: ill.
- Oberland.** Winter sport in the Bernese Oberland. Meiringen, Brugger (1921)
 $9\frac{1}{2} \times 11\frac{1}{2}$: pp. 8, ill.
- Palmer, Howard, and Thorington, J. Monroe.** A climber's guide to the Rocky Mountains of Canada. Published for the American Alpine Club. New York, Knickerbocker Press, 1921. \$2.50.
 $6\frac{1}{2} \times 4\frac{1}{2}$: pp. vii, 183: maps.
- Qvale, Finn.** Skistavlen hvoedan den bør vaere. Foren. t. Skiodraettens fremme. 1921
 $9 \times 5\frac{1}{2}$: pp. 5: ill.
- Ricci, Leonardo.** Osservazioni geografiche nella catena Orobica. In L'Universo, Firenze, anno 3, num. 2. Febbraio 1922
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 63-75: plates.
- Roseggers Land.** 10 Originalradierungen und zwei Holzschnitte aus der grünen Steiermark von Leopold Scheidl mit einem Begleitworte von Hugo Greinz. Wien, Würthle, 1921
 13×10 : pp. 3: 12 plates.
 The plates, beautifully delicate, are of scenery in winter.
- Sacco, F.** Il glacialismo nelle Valli Grigiane, Rhemes e Savaranche. In L'Universo, anno 2, num. 11-12. Firenze, Nov.-Dic. 1921
 $9\frac{1}{2} \times 7$: pp. 734-785: map, plates.
- Sayce, R. U.** The Drakensberg. In Geogr. Teacher, London, vol. xi, pt. 3. Autumn 1921
 $8\frac{1}{2} \times 6\frac{1}{2}$: pp. 158-162.
- Seldl, Wilf.** Wachauer Bilder. Mit Text v. Friedr. Reischl. Hefte 1-2. Wien, Würthle, 1921
 $11 \times 8\frac{1}{2}$: pp. 5: 18 plates.
 The plates are of architecture.
- Siegen, Joh.** Les légendes du glacier recueillies dans le Lötschental. Lausanne, Editions Spes, 1921. Fr. 5
 $6\frac{1}{2} \times 5$: pp. 80: ill.
 An interesting small volume of mountain legends.

- Simony, F.** Auf dem Hohen Dachstein.
 $7\frac{1}{2} \times 5\frac{1}{2}$: pp. 96 : map, ill. Wien, Oesterr. Schulbücherverlag., 1921
 This is a school-book published with the object of interesting readers in the beauty of the Alps. The text is reprinted from Wiener Zeitschrift f. Kunst, Nov. 1843 and June 1844.
- Switzerland.** Swiss Tourist Almanac edited by the Swiss Tourist Information Office. Winter season 1921-22. Olten, Walter, 1921
 $7\frac{1}{2} \times 5$: pp. 111 : plates.
- Contains, among other articles :—
W. A. B. Coolidge, My first visit to Switzerland, January 1874 :
A. Lunn, Development of British ski-ing.
- Teichman, E.** Journeys through Kam, Eastern Tibet, In Geogr. Journ., vol. 59, No. 1. January 1922
 $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 1-19 : plates, map.
- Terschak, E.** Die Photographie im Hochgebirge. Ein Ratgeber für Bergwanderer. 4. Aufl. neu bearbeitet von Dr. J. Rhenden.
 $7\frac{1}{2} \times 5\frac{1}{2}$: pp. 110 : 35 plates. Berlin, Union Deutsche Verlagsges., 1921
- Thomson, J. Arthur.** Mountain and moorland. Nature lover's series.
 $7\frac{1}{2} \times 4\frac{1}{2}$: pp. 176 : plates. London, S.P.C.K., 1921. 6/-
 A charmingly written work on mountains and the animal and plant life thereon, and their adaptation to surroundings.
- Vaillat, Léandre.** Notre Savoie. Paris, P.L.M. (1920)
 $7\frac{1}{2} \times 5$: pp. 219 : ill.
- Vallo, H., et de Lépina, J.** Les Aiguilles Rouges et la Chaîne du Brévent. Ex La Montagne. Paris, Barrère, 1921. Fr. 3.50.
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 52 : map, plates.
- Wilcox, W. P.** Autochrome photography. Published by the American Alpine Club. 3 January, 1920
 9×6 : pp. 7.
- Young, G. W.** Hills and a Boy. In *Cornhill Magazine*, London, Nos. 302-4. Aug., Sept., Oct. 1921
 $9 \times 5\frac{1}{2}$: pp. 32.
- Younghusband, Sir Francis.** The Heart of Nature or the Quest for Natural Beauty. London, Murray, 1921. 12/-
 $8\frac{1}{2} \times 5\frac{1}{2}$: pp. xxviii, 235.
 Chapters on the Himalayas : the forest and its denizens, Kinchinjunga, high solitudes, home beauty, Nature's ideal, the heart of Nature, etc. A very readable book.

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Taufrosch : *C.A.S. Jahrb.*

Tibet : E. Teichman, Kam.	Waseneck : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Tödi : <i>C.A.S. Jahrb.</i>	Watzesp. : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Torfinnstinde : Norske Turistf. Aarbok.	Westl. Törleck : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Torre Delago : Soc. Escours. Milan.	Wildersender : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Torstein : <i>D. u. Oe. A.-V. Reichsteiner.</i>	Witteberg : <i>Mountain Club.</i>
Travel : W. Lindner, Vom Reisen.	Zahringskogel : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Truffer, P. J. : C. Gos, Propos.	Zugsp. : J. Doposcheg.
Urnerberge : <i>C.A.S. Jahrb.</i>	Zwerlenberg : <i>D. u. Oe. A.-V. Reichsteiner.</i>
Valgrisanche : F. Sacco, Glacialismo.	
Vanoise : <i>C.A.S. Jahrb.</i>	
Walhamsp. : <i>D. u. Oe. A.-V. Reichsteiner.</i>	

NEW EXPEDITIONS.

Mont Blanc Group.

MONT DOLENT, BY THE S.W. FACE.—Reverting to the ascent described on p. 164, Count Aldo Bonacossa informs us that the same route was followed on June 6, 1917, by himself with Sergeant Julien Rey of Courmayeur, while on leave. They left Pré de Bar at 0.45 and reached the summit at 9.45, and were back at 13 h. The only obstacle was a great crevasse about midway up the Glacier de Pré de Bar.

The remarkable series of ascents made in 1921 by the same climber will be noted in the Record of Expeditions.

Pennines.

PASSAGE FROM THE WEISSHORN HUT TO THE UPPER PLATEAU OF THE BIES GLACIER. Mr. C. F. Meade with Pierre Blanc. Aug. 13, 1910.—This useful passage was referred to 'A.J.' xxv. 275, note. Further particulars are now available :

'I find from my diary that we crossed the more westerly and less obvious of two depressions in the E. arête of the Weisshorn. This depression occurs below the point where the usual Weisshorn route joins the arête, and when we left the Weisshorn hut (4.15 A.M.) we kept the parties bound for the Weisshorn well away on our left.

'After crossing the depression mentioned we descended across two bergschrunds (about 6.40 A.M.), and continued descending westerly (i.e. towards our left) till we could ascend a snow couloir in the rock barrier running down N.E. On surmounting the barrier we found ourselves on the plateau of the Bies Glacier. The Bieshorn was subsequently reached at 10.20 A.M., and the Brunegghorn at 2.25 P.M. The times include an hour and a quarter's halt. The going was heavy and the weather misty.'

C. F. M.

On August 20, 1920, Mr. E. G. Oliver, with Adolf and Alfred Aufdenblatten, crossed the more easterly of the two snow-saddles, which are separated by a small rocky summit, and descended on to the Schmol Glacier, where they became involved in séracs, and were forced to descend the glacier a long way, until after an arduous scramble over rough ice and rocks they gained the upper plateau of the Bies Glacier (4½ hours), having turned the upper icefall by rocks on its right bank. Thence they gained the E. arête of the Bieshorn well above the Joch. From the summit they descended by way of the W. arm of the Turtmann Glacier and the Col de Tracuit to Zinal.

Mr. Meade's route is obviously preferable and shorter.

Primiero Dolomites.

THE following new ascents are announced:—

Dente del Cimone, by the S.W. face. August 4, 1919. S. and G. Langes.

Rosetta, by the W. face. August 29, 1919. The same and H. Bonetti.

Cima della Madonna, by the N.W. ridge. July 19, 1920. E. Merlet, G. Langes.

Pala di S. Martino, by the S.W. buttress. July 24 and 25, 1920. The same.

Campanile Pradidali, by the E. face. August 11, 1920. The same.

Campanile Bettenga, by the N. ridge. July 26, 1920. The same and S. Langes.

Cima Immink, by the E. face. August 13, 1920. The same.

Cima di Val di Roda, by the E. face. August 7, 1920. S. and G. Langes.

The same party climbed next day the W. face.

Cima di Pradidali, by the N.W. corner. August 1920. The same and Prof. Dr. Hans Lorenz.

Cima di Val di Roda, N. arête, which carries the Camp. di V. di R., Camp. di Castrozza, Camp. Adele, Camp. Bettenga, Corno Schmitt and Pala di San Bartolomeo, was climbed from N. to S. by G. Langes and Karl Hannemann. This very difficult expedition is said to be the finest ridge-climb in the Dolomites and takes nine to eleven hours for two climbers climbing mostly together. It involves new routes up several of the traversed peaks. The ridge is well shown on the map of the Pala group in *Hochtourist*, iii.

Campanile Adele, by the N. face. September 1920. V. Perathoner, H. Reinstaller, G. Langes.

Cimone della Pala, by the face from the Malga Pala to the foot of the E. arête. August 2, 1921. S. and G. Langes.

Cima di Val di Roda, by the N.W. face. August 28, 1921. H. Reinstaller, S. and G. Langes, and Prof. Dr. H. Lorenz.

Pala di San Martino, *descent* by the whole arête to the Altipiano. August 30, 1921. Same party. (The *ascent* was made on September 20 by G. Langes and J. Hruschka.)

Cima del Mulaz, by the N.W. face. September 14, 1921. G. Langes.

These expeditions are described in great detail in the *Ö.A.Z.*, No. 996, December 1921, and will no doubt be reprinted in the next edition of the *Hochtourist*.

VARIOUS EXPEDITIONS IN 1921.

Graians.

TRAVERSE OF PUNTA ROSA DEI BANCHI (3164 m. = 10,381 ft.), BY S. RIDGE. July 9, 1921. T. H. Somervell, G. F. McCleary, H. Symons.—From Campiglia we started up to the grassy extension of the S. Ridge of the peak, going past Pugnone, and keeping to the right of the Oratorio di San Besso. On the ridge of steep grass, very fatiguing, is a Hunting Post, at which we turned to the left, keeping to the crest of the ridge, which leads unmistakably thence to the summit. The last few hundred feet contain some difficult climbing and are slow going, though the rock is sound.

Mr. Yeld is of opinion that this may be a new climb, and not the route described as the S. Ridge in his 'Mountains of Cogne.'

BECCA DI MONCIAIR (3544 m. = 11,627 ft.), BY S. RIDGE. July 18, 1921. T. H. Somervell, H. Symons.—From the Colletto di Monciair, we climbed up the S. Ridge of the peak, keeping as far as possible on its edge, but having to traverse to the right (East) side a good deal in the middle part of the climb. A loose and steep chimney about one-third way up must be avoided; near the summit we found a cairn, above which are some good exposed and fairly difficult slabs, the best part of the climb. We came down by the N. Ridge to the Colle di Ciarforon.

We found at the Rifugio V. Emanuele an account of the climbing of this ridge a week before by an Italian party, but we were not clear as to the route. This accounts for the cairn.

CRESTA GASTALDI (3862 m. = 12,671 ft.), BY S. FACE. July 21, 1921. T. H. Somervell, H. Symons, O. Thornycroft.—From the Colle di Gran Paradiso we skirted the Noaschetta Glacier, past point 3434, and keeping clear of the snow-chute below the Colle dell'Ape and its hanging glacier, to the first conspicuous chimney beyond it, we started up this chimney (point 3429). The start is hard owing to ice, but it soon becomes easier, and the slabs on

its left afford a good and safe climb until a platform is reached. From this we crossed the head of the chimney and climbed on a slabby buttress which leads to a short ridge of snow, thereby joining the main mass of the cliff about half way up.

Thence slabs were climbed for 100 ft. or so, until we were forced to traverse to the left horizontally for about 200 ft. At the end of the traverse is a groove up which we went for a distance of 150 ft. or so; we then arrived at a small platform. Above this a buttress of splendid rock leads upwards. This proved the crux of the climb, and was very exposed and equally enjoyable. Above it easy rocks for 200 ft. lead to the snowy summit, 1500 ft. above the start of the climb.

This is a most delightful climb when the rocks are in good condition, as they were in July 1921. Moreover, it seems to be the only way up this face of the mountain that is safe from falling ice or stones. The rock is magnificent throughout, and the climb is steep and exposed, but not extremely difficult.

ALPINE NOTES.

HIS HOLINESS POPE PIUS XI.—Cardinal Achille Ratti, a reference to whose Alpine career appeared on page 179, has now been raised to the pontifical chair.

The Alpine Club ventured to telegraph :

‘SUA SANTITÀ IL PAPA,
‘Vaticano, Roma.

‘L’Alpine Club, Londra, rallegrandosi elezione illustre Alpinista al Pontificato manda felicitazioni rispettose e sincere,’

and was honoured by the following reply :

‘PRESIDENTE, Club Alpinisti, Londres.

‘Santo Padre ringrazia devoto omaggio benedice.

‘CARD. GASPARRI.’

‘BALL’S ALPINE GUIDE,’ THE WESTERN ALPS.—A new edition (1898) of this work, reconstructed and revised on behalf of the Alpine Club by the Rev. W. A. B. Coolidge, Fellow of Magdalen College, Oxford, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It covers the Western Alps from the Mediterranean to the Simplon, S. of the Rhône. Price 13s. net, post free 13s. 8d. net.

‘BALL’S ALPINE GUIDE,’ THE CENTRAL ALPS. PART I.—A new edition (1907) of this work, reconstructed and revised on behalf

of the Alpine Club under the general editorship of the Rev. A. V. Valentine-Richards, Fellow of Christ's College, Cambridge, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It includes those portions of Switzerland to the N. of the Rhône and Rhine Valleys. Price 7s. 6d. net, post free 7s. 11d. net.

'BALL'S ALPINE GUIDE,' THE CENTRAL ALPS. PART II.—A new edition (1911) of this work, reconstructed and revised on behalf of the Alpine Club under the general editorship of the Rev. George Broke, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It includes those Alpine portions of Switzerland, Italy, and Austria which lie S. and E. of the Rhône and Rhine, S. of the Arlberg, and W. of the Adige. Price 8s. 6d. net, post free 9s. net.

MAP OF THE VALSESIA.—Some copies of the Map issued with the ALPINE JOURNAL, No. 209, and of the plates opposite pages 108 and 128 in No. 208, are available and can be obtained from the Assistant Secretary, Alpine Club, 23 Savile Row, W. Price for the set (the Map mounted on cloth), 3s.

THE 'CLUBFÜHRER DURCH DIE WALLISERALPEN.'—Vol. II., edited by Dr. Dübi, covering the country from the Col de Collon to the Théodule, has just been published (380 pages, with many excellent route-marked illustrations). Price 10½ Swiss frs., post free. A French edition is promised next year. Dr. Dübi will be glad to have any errors pointed out.

THE ALPINE CLUB OBITUARY :	Date of Election.
Blanford, T.	1860
Stone, Rev. J. K. (Father Fidelis)	1860
Cheetham, F. H.	1867
Baillie-Grohman, William A.	1874
Little, William	1878
Bryce, Lord.	1879
Wills, J. T.	1881
Hopkinson, Edward	1887
Bird, Sir Alfred F.	1891
Gordon, Rev. J. M.	1896

THE ITALIAN FRONTIER.—Reverting to the note on page 177, formal representations have now been made to the Italian Ambassador, and it is understood that pourparlers are proceeding with Rome. It is hoped that before the summer the Italian authorities may be induced to relax, in the case of members of this Club whose *bona fides* cannot be impugned, formalities that, without doubt, militate against travel in Italy.

MR. FRESHFIELD is of opinion, after careful examination, that, seen from M. Sissone, M. Blanc, mentioned by Sir James Ramsay in his interesting 'Recollections,' p. 73, is really the Weisshorn.

A PROPOSAL to re-name certain summits in the Adamello-Presanella group after noted Entente politicians, was combated, very energetically, in *The Times* by Mr. Freshfield. It is hoped that such an unwelcome suggestion will be dropped.

DR. AND MRS. VISSER, with Franz Lochmatter, start, towards the end of April, on a mountaineering expedition to the Karakoram Himalaya.

THE PINNACLE CLUB (FOR LADIES).—'This club is the outcome of a steadily growing conviction among many women that it was desirable to have a centre—social, educational and advisory—for women and girl climbers.

'In climbing with men, where "the best must lead," women have little opportunity to master, or to enjoy, the finer points and sensations of the art itself; to learn the business of finding their climbs, of steering a mountaineering course, or of exercising judgment and responsibility in the actual climbing. . . . The new Club makes a special feature of the training of its beginners, both in route-finding and in technique; and . . . it supplies an energetic criticism—free from the polite restrictions imposed by differences of sex—of the methods and the capabilities of all its members.'

The inaugural meeting of the Club was held at Pen-y-Gwryd on March 26, 1921, and it already numbers over sixty members.

For full membership a high qualification is demanded: the knowledge of, and a past experience in, general mountaineering conditions, and the ability to lead and to direct rock ascents of a moderately difficult order.

The President is Mrs. Winthrop Young, and the Secretary Mrs. E. Kelly.

MRS. NORMAN-NERUDA, daughter of the late Edward Peyton, A.C., and widow of L. Norman-Neruda, A.C., killed on the Fünf-fingerspitze, herself a good mountaineer, has taken over the Pension Neuhaus, Thierberg (about 2000 ft.), near Kufstein, the gateway to the difficult peaks of the Kaisergebirge.

It is to be open all the year round. Good fishing and boating in summer; winter sports of all kinds. Pension, 4s. to 5s.

After her husband's death Mrs. Neruda lived at Cortina, until its evacuation in 1915. At the Peace the Italians allowed no one to resume or continue residence there save members of the Commune of Ampezzo. Her daughter, married to an Austrian, is a mountain painter of the Compton School.

M. HENRI FERRAND, the authority on the French Alps, has had the well-merited honour conferred of Chevalier de la Légion d'honneur in special consideration of his numerous Alpine publications and of his vice-presidency of the Société des Touristes du Dauphiné. We take the opportunity of congratulating our Hon. Member on his sixty-ninth birthday (March 1).

THE FIRST ASCENT OF THE GRANTA PAREI.—This mountain (formerly called the Grand Appareil), which forms such a conspicuous object at the head of the Val de Rhêmes, was first ascended August 22, 1863, with Joseph Favret of Chamouni and a Rhêmes chasseur called Nicholas Jacob in the preliminary notice published in the 'A.J.' i. 200.

In the fuller account given in 'A.J.' ii., Mr. R. C. Nichols states (page 21) that his party engaged as assistant guide 'a likely-looking fellow, an *ancien militaire*, by name Jean Jacob.'

The real name of the assistant guide was Jean *Jaccod*, several of whose sons are still living in the Val de Rhêmes, and who have recently told me that they have heard their father say that he accompanied some Englishmen in the first ascent of the Granta Parei. Jean's father was Claude Nicolas Jaccod, and it seems probable that the confusion arose from Jean having described himself as 'Jean de Nicolas'—a very common custom in those parts.

Claude Nicolas was sixty-six years of age in 1863, as his *permis de chasse* for 1868 in my possession shows.

Jean Jaccod was for many years a keen and able chamois hunter, and occasionally acted as guide. He and (I believe) Casimir Thérissod accompanied Signor Bobba in his difficult and risky descent of the Col des Grandes Rousses (Bec de l'Invergnan). Signor Bobba describes him as an excellent mountaineer, *très souple*. He died about twenty years ago, nearly eighty years old.

G. STALLARD.

DISCOVERY ON THE AROLLA GLACIER.—Two men crossing the Col de Collon last autumn came on the skeleton of a hunter by whose side lay that of a chamois, an old rifle, and some pieces of money bearing dates prior to 1850. The extraordinary shrinkage of the glacier doubtless accounts for the find. (*Communicated by Mr. and Mrs. WILLMOTT.*)

KRIEGALPSTOCK OR P. CORNERA DENTRO (2718 m., 8917 ft.) LEPONTINE ALPS.—There is a note on the 'three very rotten pinnacles' known by this name in the 'Climbers' Guide' to the Lepontine Alps (1892), and in Mr. Broke's edition, part 2, of Ball's 'Central Alps' (1911). The ascent of the N.W. pinnacle was declined in 1891 by Mr. Coolidge with C. Almer II owing to its 'exceedingly rotten character.' It has since been ascended twice, but Mr. Coolidge's judgment is borne out, inasmuch as the

S. pinnacle has now collapsed. Signor Ettore Allegra's photograph, taken in 1917 when on service with the Alpini, shows three pinnacles, but Count A. Bonacossa, when on similar service in 1918, remarked only two, which is confirmed by photographs in 1921. An interesting illustrated article by Rag. Riccardo Gerla, the enterprising member of the Milan Section C.A.I., and an authority on the district in question, appears in the February publication of the Section.

THE BALTSCHIEDERTHAL, which joins the Rhone Valley opposite Visp, a wild and unfrequented valley, is to be endowed with a hut at the Jägi Tierweidli this year. It is to be hoped that it may escape the deluge of tourists that, latterly, have made a night in the Oberland huts a purgatory for members of the S.A.C. and other climbers alike. The principal ascents are the E. arête of the Bietschhorn and the Lötschthaler Breithorn.

ALPINA. The monthly publication of the S.A.C. has been considerably enlarged, and now contains, besides official information, an illustrated article of mountaineering interest. The editor is Dr. Ernst Jenny.

MR. A. VERSLUYS of Baarn, Holland, with Josef M. Julen and Josef Knubel, left the Trift Inn at 1 on July 26, 1921, gained the Rothhorn at 5.15 and the Schallihorn at 10.15. Leaving the summit at 11 the last man, Julen, at 12, fell about 20 m. through a rope sling breaking. He sustained fortunately only slight injury, but the plan of solving the problem of including the Weisshorn in the day's work had to be abandoned.

On August 6 Mr. Versluys with Knubel and H. Pollinger, with the Herren Hans Pfann and Horeschowsky, as a second party, left Schönbühl at 2; foot of Viereschlgrat, 4 to 4.30; summit of Dent Blanche, 9.15 to 10.30; Schönbühl, 13.30.

The same climber, on August 8, ascended the Matterhorn by the Z'Mutt from Schönbühl in 6 hours, halts included.

The hitherto splendid weather came to an end immediately afterwards.

THE LATE JUDGE SMYLY, who died lately, aged eighty-two, was a member of the A.C. since 1878. He rowed in the Cambridge Eight in 1862 and 1863, and was President of the C.U.B.C. in 1863. Unfortunately, no record of his climbing career is available, but it is understood he was a patron of the late Peter Baumann (Guggen).

KILIMA'NJARO.—Notices of the so-called first ascent by Englishmen lately appeared in the papers, in evident ignorance of the ascent of Kibo, the higher summit (19,321 ft.), in 1914, by Mr. William C. West of Cape Town, for many years energetic Hon. Secretary of

the Mountain Club of South Africa. Mr. West's ascent was made with two native porters, and is described and illustrated in the Annual of the Club, No. 18, 1915.

THE SONGS OF THE MOUNTAINEERS.—Compiled for the Rucksack Club by John Hirst, B.A. Cantab., M.I.E.E., is a collection of original songs, verses, and parodies about mountains and mountaineers, some copied from Club Journals and other publications; the majority printed for the first time. Copies may be obtained from Arthur E. Burns, 98 Longford Road, Chorlton-cum-Hardy, Manchester. In linen-backed paper cover, 3s. 3d. post free; or in limp leather cover, 3s. 9d. post free.

AN ATTEMPT TO CLIMB MT. KENYA was made in February 1921, by a party consisting of Mrs. C. Ross, a life-member of the Mountain Club of S.A., who has done a great deal of climbing in the Cape Province, her son, Asst. Commr. J. G. Hamilton Ross, and Messrs. Richard and Reginald Thompson, with a native guide and 32 porters and attendants.

The expedition took 14 days from Fort Hall to Peak and back. (Fort Hall to base = 60 miles.)

The route led :

' From Fort Hall to Nyeri—West Kenya Forest Station—through forest, bamboo belt, and over the grass and giant groundsel belt to the head of the Hausburg Valley where a base camp for the porters was made.

' One tent was taken on, past the Emerald Lake to above the 14,000 ft. Lake and pitched there. Porters came up each day with firewood and fresh bread.

' The first attempt was made on February 3, 1921; *via* the Tyndall Glacier. We passed up its left side, cutting steps, then left the glacier and moved up the rocky wall, greatly hindered by finding hand or foot-hold coated with ice. Had to abandon further ascent owing to snowstorm at about midday, and which lasted till sunset. A similar storm had occurred previous day.

' Estimated altitude attained 16,000–16,200 ft. (Height of Peak, 17,200 ft.)

' Following day we passed round Pigott's Peak, below Joseph and Caesar Glaciers, up moraine to ridge overlooking the Mackinder Valley, and up a snowy Col towards the point aimed at the previous day from the opposite side. Found rock brittle, frozen snow unreliable and time late, so abandoned attempt at about the same altitude. Commenced descent on February 5th.

' No sickness of any sort amongst Europeans or natives, and no complaints from the latter.

' February was chosen as being the finest month, yet during the whole period of our trip, people below reported that the peak was hidden in clouds every day. Those clouds meant snowstorms. Porters were given one red blanket each, double rations of mealie

meal and "extras" in the shape of ghee and brown sugar, and occasionally hot coffee or cocoa, in addition to the usual porters' pay.'

In March 1921 Mrs. Ross and another lady made the ascent of Mt. Kinangop, the highest point (13,000 ft.) in the Aberdare range.

J. G. HAMILTON ROSS.

[Cf. 'A.J.' xx. 102 *seq.*, art. by H. J. Mackinder on the first ascent, and 'R.G.S.J.' July 1921, art. by J. W. Arthur on an attempt; both with maps and illustrations.]

REVIEWS.

Early Explorations in British Columbia for the Canadian Pacific Railway. By Howard Palmer. Reprinted from the Bulletin of the Geographical Society of Philadelphia, vol. xvi., No. 3, July 1918.

MR. PALMER has given us a very clear sketch of what may be called the mountain history of the Canadian Pacific Railway down to its completion in November 1885, but as the title of his paper suggests, its essential kernel is the story of the explorations of 1871-74. It was not by any means an easy story to tell, and it is told with admirable lucidity. Mr. Palmer is principally interested in two topics: first, the merits as an explorer of the late Walter Moberly, which, in his opinion as in Mr. A. O. Wheeler's, have never been adequately recognised; secondly, the topography of the intricate mountain system which separates the head-waters of the Fraser, the Canoe River, and the North Thompson, and its western extension in the great Cariboo range. One is surprised to learn that so much work was done in this region, which is still 'essentially *terra incognita*.' Mr. Palmer's explanation is that 'the topographical information obtained was only scantily transferred to maps, and therefore has in great measure been lost. Had the surveyors acted also as topographers, the present maps would be far more adequate.' On the other hand, there appear to be voluminous records of these and other explorations in existence in the shape of Reports of Progress. 'Some day, no doubt,' says Mr. Palmer, 'the stories will be rescued from the oblivion of the Government Reports, and well worth the telling they will be.' Elsewhere he refers to the Report of a Royal Commission appointed in 1880 to investigate the affairs of the Railway, which, in 1882, published *in extenso* the operations and results of the different surveying parties in British Columbia, as described by Moberly and other engineers in charge, 'a record of unique interest.' The revelation of this mass of unworked material is the most arresting feature of an interesting paper. When will some competent person take it in hand?

A. L. M.

Oxford and Cambridge Mountaineering, 1921. Edited by Raymond Greene, Pembroke College, Oxford, and E. Wallis, King's College, Cambridge. S. G. Marshall, Cambridge. 4s.

It was a happy idea for Oxford and Cambridge climbers to combine in producing a collection of essays, and we hope that the experiment will be repeated. The result in the present case is a very readable little volume, remarkable for the range and variety of its contents. There are twelve contributions, distributed nearly equally between the two Universities (Oxford owes to the assistance of two well-known veterans its slight numerical superiority). They are not arranged in any discernible order, but fall naturally into four groups. Three papers are Alpine. Mr. Hallward (Cambridge) tells the story of a tour which began at St. Gervais, and ended, after many devious wanderings, at Chamonix. There the Grand Charmoz, the Dru, and the Grépon were climbed in the last week, but taken as a whole it was a far more 'eccentric' holiday than that described by the Oxford Editor under the title 'The Oberland from End to End.' His party started at Aigle, and arrived on one occasion at the Grimsel, but the outstanding feature of their itinerary (which included a goodly number of expeditions, mostly guideless) is that they managed to spend so much time, by an adroit use of the Jungfraubahn, the Lötschberg tunnel, and other modern amenities, amid the fleshpots of Grindelwald. Mr. Wolfenden (Oxford) presents us with a pleasant and informing picture—well worth drawing—of travel in Tirol under post-war conditions.

Outside the Alps Captain Longstaff gives his impressions of Spitsbergen, two Cambridge men describe their ascent of Beerenberg in Jan Mayen Island, and another Cambridge man a camping tour with tents, carried out by a party of four in the Pyrenees. This is a charming paper, to which Count Henry Russell, though he might have shaken his head over the tents, would have accorded his benediction. Akin to it in spirit is the story of a month's camping, with a donkey, in North Wales, told with a deft and light touch by Mr. Storr (Cambridge). The paper on 'The Mountains of Kerry' by Mr. Vandeleur (Oxford) belongs to a different category, and forms a real addition to climbing literature. Giving himself enough, but not too much, elbow-room, the writer does ample justice to an interesting subject, practically untouched, so far as we are aware, save by Mr. H. C. Hart, whose severe conciseness left his readers in some doubt as to both the quantity and the quality of the climbing in this region. The last of the contributions concerned with the British Isles is the most serious climbing paper in the volume, and describes several entirely new expeditions with verve and gusto. The scene of these exploits is Cambridge, which seems to have a monopoly of the literature of this branch of mountaineering, though we suspect that Oxford is not wholly innocent of the practice of it.

In the three remaining papers Science is represented by Mr. Arnold Lunn on the Foehn, the Art of Life by Mr. Godley on 'The Age of

Retirement,' an all too brief fragment which will repay very careful perusal, and Literature by a brilliant essay from Mr. R. G. Collingwood (Oxford), on Ruskin, in which R.'s relations to mountains and mountain-climbers are analysed with masterly lucidity and completeness.

Propos d'un Alpiniste. Par Charles Gos. Lausanne, 1922. (Frs. 4.50 Sw.)

MAJOR GOS is already known not only as an author of mountain subjects, but of plays and more serious works which have run into several editions.

The first part of the present volume is mainly connected with the early history of the Cervin, into which naturally are woven constant allusions to Mr. Whymper, of whom he is a devoted admirer. He quotes on page 50 an unrecorded remark of Mr. Whymper's upon Croz's death. It is not easy to grasp Mr. Whymper's line of thought.

There are chapters on the Alpine careers of Mr. Whymper and of Croz, forming convenient summaries. A similar attention is paid to the career of Mr. Coolidge's 'Tschingel,' who was quite up to the qualification standard of the A.C.!

The rest of the volume consists of short studies which remind one of Javelle, while descriptions of visits to Franz Lochmatter and his seven little girls and to Joseph Pollinger, busy with his bees, are quite delightful.

CORRESPONDENCE.

THE EVEREST EXPEDITION.

MONSIEUR LE PRÉSIDENT,—Au moment où les derniers membres de l'Expédition de l'Everest vont s'embarquer pour les Indes, la Section Genevoise du Club Alpin Suisse tient à venir leur présenter ses vœux les plus chaleureux pour l'entière réussite de leur courageuse entreprise.

Les clubistes Genevois savent trop ce qu'ils doivent aux premiers grimpeurs Anglais, les Kennedy, les Mathews, les Tyndall, les Whymper, pour citer au hasard quelques grands noms des pionniers de l'alpinisme, pour ne pas suivre avec un intérêt passionné les progrès de ceux qui partent à la conquête de la plus haute cime de l'Himalaya.

Puissent leur courage, leur persévérance, leur énergie être récompensés par le triomphe, et puissent-ils revenir heureux et vainqueurs au milieu de ceux qui les accompagnent aujourd'hui de leurs vœux les plus sincères.

C'est dans ces sentiments que nous vous présentons, Monsieur le Président, l'assurance de notre parfaite considération.

Le Président, DR. F. DORET.

Le Secrétaire, LOUIS FATIO.

Section de Genève,
C.A.S., Genève,
le 25 février 1922.

Au Président de l'Alpine Club, Savile Row, Londres.

MONSIEUR LE PRÉSIDENT,—A l'occasion du prochain départ de l'expédition qui doit monter à l'assaut de l'Everest, la Section des Diablerets du C.A.S. tient à envoyer aux membres de l'expédition et à l'Alpine Club ses vœux les plus chaleureux d'heureuse et entière réussite dans cette entreprise qui marquera dans les annales de l'alpinisme international.

Veuillez agréer, Monsieur le Président, l'expression de nos sentiments clubistiques les plus cordiaux.

Au nom du Comité,

Le Président, Dr. J. AMANN.

Le Secrétaire, A. LIENGME.

Section des Diablerets,
C.A.S., Lausanne,
le 25 janvier 1922.

THE SCHALLIGRAT.

DEAR CAPTAIN FARRAR,—I read the interesting paper by Mr. R. W. Lloyd, published in the November JOURNAL. On page 113 are mentioned the ascents of the Schalligrat by Sir Edward Davidson in 1877 and by the late Mr. Broome in 1895.

In September 1900, accompanied by Daniel, Antoine, and Ange Maquignaz, I descended the Schalligrat to the Schallijoch, where I had to bivouac on the ice—the coldest bivouac I remember. The following morning we found our way through the labyrinth of séracs of the Schalligletscher and descended to Randa. I may mention that I was indebted to Sir Edward for the suggestion of this delightful descent—the first, I believe, that has been made.

I hope, my dear friend, you have received the old photograph of J. J. Maquignaz which I sent you some time ago. I take this opportunity of telling you how greatly I value the rich contents of the ALPINE JOURNAL, always so full of precious material for the history, ancient and new, of mountain adventure.

I consider the 'A.J.' as the holy book of all climbers in the world.

Believe me,

Yours faithfully,

GUIDO REY.

Turin,
January 24, 1922.

FROM SIR AUREL STEIN, K.C.I.E., D.Sc., ETC., ETC.

DEAR CAPTAIN FARRAR,—Let me thank you very heartily for your kind letter of November 15, received by the last mail. I am delighted to know that my little paper on Johnson's K'un-lun climbs is to share, with that of my friend Major Mason, the honour of appearing

in the JOURNAL. I reckon it as a real distinction, second only to that of belonging to the Alpine Club.

It shows your kind personal interest to have rightly felt in those few matter-of-fact pages what you call the 'Call of the Wild.' Indeed, my longing for the mountains and deserts is great and constant. Were it not that I can do my writing work (of which there is, alas, plenty) each summer in the Alpine solitude of 'my' mountain top in Kashmir (Mohand Marg, 11,000 ft. above sea-level), I should find it still harder to restrain it. However, I hope to finish next year the detailed report on the results of my third Central-Asian journey, and am sanguine enough to hope that access may yet be secured for me in my present birth to what has been my lifelong goal between Hindukush and Oxus. The wish to be free for climbs and explorations without an obligation to think of tangible 'archæological proceeds' may have to be left for 'another birth'!

With renewed warm thanks and kind regards,

Yours sincerely,
A. STEIN.

Srinagar, Kashmir,
December 11, 1921.

'A CLIMBER'S GUIDE TO THE ROCKY MOUNTAINS OF CANADA.'

DEAR DR. COLLIE,—The authors of 'A Climber's Guide to the Rocky Mountains of Canada' desire to express their thanks for the review of this little book, which appeared in the recent number of the ALPINE JOURNAL.

We should also like to express the hope that you, as well as others who are 'specialists' in certain areas of the Canadian Alps, will favour us from time to time with notes upon any errors which are found within the pages of the guide.

Our little book is the first Alpine guide to the Canadian Rockies, and perhaps no other first edition of a guide has attempted to include such a large area. It would have involved endless delay had we attempted to correspond with all individuals who have made first ascents in Canada, and we therefore restricted ourselves to the existing literature. We hope that this will provoke wholesome controversy, and bring out the truth of any disputed points. If you note mistakes, which we admit are many, we shall be pleased to have you call our attention to them.

With all good wishes,

Sincerely yours,

J. MONROE THORINGTON, M.D.
(Member of American, Canadian, French,
and Swiss Alpine Clubs).

January 25, 1922.

THE COL ECCLES.

To the Editor of the ALPINE JOURNAL.

Feb. 9, 1922.

DEAR SIR,—My recollection of the interesting expedition described by Captain Finch, pp. 117–131, accords very closely with his. I notice he suggests for the depression between M. Blanc and the Pic Eccles the name Col Supérieur du Fresnay instead of my proposed name, Col du Brouillard. The col, in any case, is of small importance, and probably the simple name Col Eccles would be preferable to either of our suggestions. In any case, the name Col du Mont Blanc proposed by the MM. Gugliemina ought, in my opinion, to be reserved for more important use.

Yours faithfully,
E. G. OLIVER.

THE PHOTOGRAPHIC EXHIBITION.

AN Exhibition of Photographs was held at the Alpine Club from December 5 to 17. As will be readily understood, the chief attraction was a selection of the photographs taken on the Everest Expedition, the first to be shown in public. This contribution by the Everest Committee consisted of seventeen enlargements from photographs by Col. Howard Bury. Apart from the interest which they naturally aroused, they were extraordinarily beautiful and impressive. Two of the panoramas in particular were very remarkable. One of the Makalu and Everest groups taken from about 21,000 ft. south of the Kharta Valley, showing Kangchenjunga in the far distance beyond a huge sea of cloud, conveyed better than any of the enlargements the immense scale of this amazing region. The other was perhaps the more directly interesting as it was taken from the Lhakpa-La, where the last camp was pitched, and showed the North Col and North arête of Mount Everest by which it is hoped that the ascent of the great peak will be achieved. Mount Everest as seen from this point (the actual summit is, by the way, not visible) is a very beautiful object, rising in a graceful snowclad cone from a snowfield between the Lhakpa-La and the North Col. Of the other pictures the most noticeable were 'Mount Everest from the Lhakpa-La,' taken from a slightly different spot to the panorama; 'View from 21,000 ft. looking south across the Kama Valley to Makalu,' a splendid view of this stupendous group of peaks rising several thousand feet above anything near it. Makalu strikes us as being an even more

impressive mountain than Everest itself. 'Coolies resting at Pethang at the Foot of Makalu' and 'the North Peaks of Makalu, looking east,' were equally fine. As regards the two latter it may be mentioned that these peaks belong to a northerly spur of Makalu now named Chomo Lönzo, and in neither view is Makalu itself visible, being hidden by Chomo Lönzo in the first named, and in the second it lies to the right.

Other districts of the Himalayas were also represented by five pictures sent by Mr. G. L. Corbett and by six contributions by General Bruce. All Mr. Corbett's pictures were very beautiful, the most noticeable being 'The Road to Leh' and 'Where Nubra and Shyok meet,' and three of General Bruce's were distinguished by the beauty of the subjects. 'Peak-Head of the Solang Valley' and 'The Central Lahoul Massif' were both magnificent, but 'The Peak above the Bara Lacha Pass,' with its superb cloud-wreathed mountain, was a thing to be remembered.

There was also a striking photograph of an icefall on Kabru, for which Mr. Rubenson, one of our Norwegian members, was responsible. Of other distant mountain regions Mr. Eilert Sundt, another Norwegian member, showed an interesting set of views in the somewhat desolate Aconcagua district and a beautiful picture of a bold rock-peak in the Patagonian Andes. The Rev. Walter Weston lent five small views taken by Japanese climbers in the Japanese Alps, one of which, 'Yakadake from Rai-ga-take,' with a smoking volcano in the distance, made a quite lovely little picture. This was the work of Mr. Takano.

Another interesting group was contributed by members of the Oxford Spitsbergen Expedition—viz. Mr. Stobart, Captain Carr-Saunders, and Mr. Frazer—in some very attractive views of the little-known icefields of that island. Particularly delightful were two of Mr. Frazer's panoramas with a stormy sky and broken lights on the water, printed in blue tones which just suited the subjects, and a charming small picture by Mr. Elton of the peaks of the mainland of Spitsbergen reflected in a glassy sea could not fail to attract attention.

The Norsk Tindeklub paid the Alpine Club a graceful compliment in sending from Norway a set of twenty-two exhibits which elicited a great deal of admiration. The Norsk Tindeklub may rest assured that the trouble it took has been most heartily appreciated by our Club. The contributions by Mr. Rubenson and Mr. Eilert Sundt have already been referred to, and the remainder were all extraordinarily fine. The two best were undoubtedly Mr. Schjelderup's 'Midnight Sun, Stedtind,' with bold effects of cloud and reflected light on the water thrown into relief by the black mass of rock in the foreground, and Mr. Backer-Grøndahl's 'Moskenesoen' with long flat clouds and soft atmosphere which is peculiar to those northern regions. Mr. Tönsberg's pictures of the wild rock scenery of Norway conveyed most effectively the



Photo : C. G. Bruce.

A PEAK ABOVE BARA LACHA, LAHOUL.

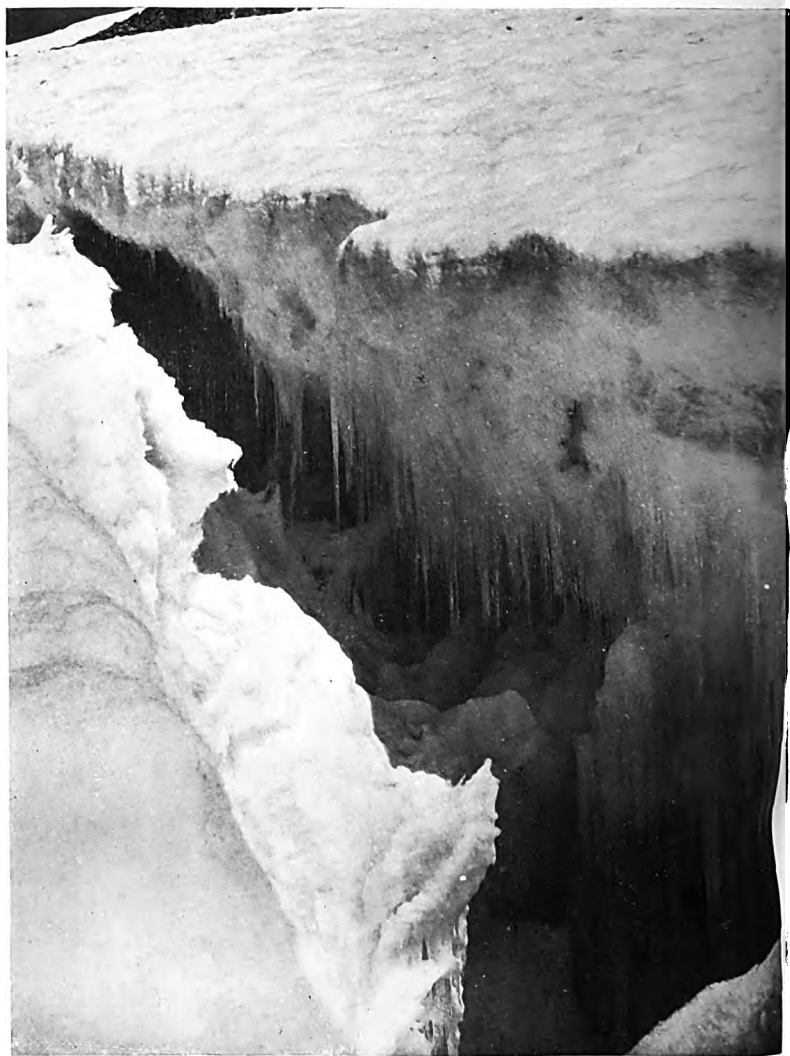


Photo : F. N. Ellis.

**A CREVASSE ON THE
LANGENFLUH GLACIER, 1921.**

characteristic features of that fascinating country. We hope that they may be induced to exhibit at future exhibitions.

The Canadian Rockies were represented by one solitary frame of three pretty small pictures by Mr. James Morrish.

Miss P. Drew sent three characteristic small photographs of the Carpathians, a country seldom represented at these exhibitions. The Tatra guide was a delightfully picturesque figure.

There were a few portrait subjects which were interesting, although we do not particularly care for this kind of exhibit. A capital likeness of the Prime Minister at Riffelalp (with his autograph), taken by the Rev. G. H. Lancaster, attracted a considerable amount of notice. This was flanked on each side by two really excellent groups also taken at Riffelalp by Mr. Tutton of certain well-known figures in the Alpine world.

To turn our attention now to the familiar regions of the Alps and the British Hills, there was abundant evidence that mountain photography has recovered from the state of stagnation into which it had fallen during the war. The Exhibition as a whole showed a great advance in quality on that in 1920 and may indeed be classed as one of the best held for many years. There was perhaps too large a proportion of small exhibits, but the general level of excellence was remarkably high. Alpine photographers still appear to confine their work to the better-known districts, and although we do not for a moment suppose that such is the case, one would imagine, judging by the Exhibitions, that British climbers rarely visited such districts as Binn, the Lepontines, the Disgrazia, and others.

However, we were glad to see that there were very few really hackneyed subjects on the walls.

Mr. F. N. Ellis, for instance, gave us something quite novel in his magnificent picture of a crevasse, in which he showed that he has the artistic sense very strongly developed. It must have been a difficult subject, and he has been most successful in conveying the impression of a fathomless bergschrund. The rim of light on the lip of the crevasse with all the rest of the picture in shadow was a very happy touch. We may add that Mr. Ellis very kindly allowed the picture to remain as a permanent possession of the Club. Then again Mr. Ralph Morrish took us out of the groove of conventionality in two small enlargements entitled 'The Grimsel Hospice from a Marmot's Point of View' and 'Glimpse in a Marmot's Park.' The latter especially was delightful, as there was really nothing much in it but a few rocks and a little water, and yet Mr. Morrish made a charming thing of it. Mr. Symons, too, showed that he could be unconventional in 'The Visp at St. Niklaus,' which was just a study of a bend in the rushing torrent, but entirely successful as a picture.

There were several other exhibits of fully equal quality. First of all we should place two small pictures sent by Mr. Arthur Gardner,

'Mont Blanc from Combloux' and 'Mont Blanc from the Lac Blanc.' The gradations of distance, with the delicate printing of the snowy monarch, without the slightest loss of definition, were most skilfully conveyed and the whole composition was a triumph of photographic art. The last-named was perhaps the more perfect, as in the other the trees in the foreground were too black, but possibly this was intentionally done to emphasise the impression of distance.

The British Hills received more than usual recognition in a very fine collection of views. Besides two of wintry Skye peaks from Mr. Arthur Gardner, there were four Scottish landscapes from Mr. Hugh Gardner, which included a charming 'Loch Clair and Beinn Liathach' and a delightful little picture of the Skye peaks from the mainland. Mr. Leonard Eagleton sent six small enlargements, four of the Scottish Highlands and two of the Lake District, all faultless in composition and execution. It would be difficult to say which was the best, but we should perhaps give the preference to 'The Honister Pass' and 'Loch Triochatan, Glencoe.' Mr. Howard Priestman contributed two characteristic studies of the Sligachan hills in stormy weather, full of atmosphere.

Mr. Hasler's 'Finsteraarhorn from the Schreckhorn' was a magnificent production, but we liked still better 'The Wetterhörner from the Tannenspitz' with its beautiful cloud effects and the bit of rock ridge very happily introduced into the foreground, giving a wonderful sense of depth below the mountain.

Sir Alexander Kennedy accomplished a veritable *tour de force* with most successful results in his picture of La Grave. The line of dark chalets in the foreground with the valley beyond in the throes of a raging storm was most telling. 'In the Val Ferret' was also very pleasing, and showed that Sir Alexander Kennedy takes infinite care in the composition of the subjects he chooses.

The Rev. A. E. Murray's 'The Dents du Midi from Morgins,' a winter landscape bathed in sunshine, was one of the best exhibits in the room and displayed exquisite lighting of winter snow.

The foregoing exhibits represent the pick of the exhibition, and General Bruce's 'Peak, Bara Lacha Pass,' Mr. Ellis's 'Crevasse,' Mr. Arthur Gardner's 'Mont Blanc from the Lac Blanc,' Mr. Eagleton's 'Loch Triochatan,' and the Rev. A. E. Murray's winter view have been selected for reproduction in the ALPINE JOURNAL.

In an exhibition of so high a standard generally, there were many others which came very close to those already mentioned.

Dr. Emanuel's 'Matterhorn from Breuil' must have been done from a technically perfect negative, but it suffered from excess of detail without sufficient light and shade, which seemed to destroy all sense of distance. The peak also appeared to lack height, which suggests that the camera was tilted too much. Mr. Ralph Morrish's 'Cornice on the Sustenhorn' was in our opinion also marred by the mass of detail, which made it somewhat hard and flat, but we are

bound to say that both these exhibits were very much admired, and were undoubtedly very impressive subjects. Mr. Symons seemed more successful in his 'Cornice on the Lauterbrunnen Breithorn,' in which the lighting was subdued and the detail not too much emphasised.

Mr. Somervell's 'Nadeljoch' was a very artistic little picture of a not particularly exciting snow ridge. The points of light on the snow texture were well brought out, and although we are not usually partial to the introduction of figures into mountain landscapes, the two figures in this case decidedly helped the composition.

'The Grandes Jorasses from the Couvercle' and 'The Aiguille Blanche de Péteret and Mont Blanc,' by Mr. Reginald Graham, were very fine, and as regards execution as good as anything in the room, although both subjects are somewhat hackneyed. Dr. Williamson's solitary exhibit, 'The Dent Blanche from below the Col d'Hérens,' was a curious piece of composition, but decidedly telling and, it need not be added, perfect in technique.

Mr. C. E. Thomson made a reappearance at this exhibition with, amongst others, two very beautiful pictures of 'Cristallo' and 'The Thurwieserspitze.'

From Mr. Mumm, one of the best photographers in the Club, came only a single contribution, 'Mont Blanc from the Dent du Midi,' interesting, as, curiously enough, we do not remember that this particular view has been before shown at these exhibitions, although innumerable photographs must have been taken from this peak.

Mr. Sydney Spencer sent an imposing enlargement of 'Mt. Blanc and the Aig. du Plan from the Aig. de Blaitière' which has been seen at a previous exhibition, very typical of the splendid pictures which can be obtained from the Chamonix Aiguilles.

Mountains wrapped in cloud are always a favourite subject with Alpine photographers, and good examples of these were shown by the Rev. Valentine Richards in 'A Cloudy Day at Chamonix,' a very soft and delicately printed picture, and by Dr. Finzi in 'Shades of Night' and 'The Italian Morning.' Dr. Finzi has a tendency to overenlarge his pictures, but in the case of the above mentioned the blurred outline rather added to the effect. Mrs. Willmott was very happy in the titles of 'Unveiled' and 'Revelation,' which gave a real impression of clouds gradually dispersing from the mountain. These would, we think, have shown to greater advantage in a broader frame moulding. We will take this opportunity of remarking that we think that many of the exhibitors do not attach sufficient importance to the question of framing.

Seracs and crevasses are also popular subjects. Miss McAndrew's 'A Crevasse, Alphubel,' was well thought out, the curving line of the crevasse being introduced in a very artistic manner. Miss Margaret King had a good picture of the Glacier des Bossons and the Aig. du Midi. The line of seracs right across the subject was rather daring. 'The Crevasse' by Captain Finch displayed fine contrasts

of light and shade, of which he also showed two beautiful examples in 'Evening Shadows' and 'Morning Lights.' Mr. Alan Greaves sent three good studies of seracs at the foot of the Upper Grindelwald Glacier, which were also highly interesting in showing the remarkable advance which has been made by this glacier in recent years.

A marked individuality distinguishes the work of both Dr. Roger-Smith and Dr. Stevens, the latter of whom showed two charming views of the Lac de Miage and 'Dawn in the Graians,' which looked curiously like a crayon drawing, very effective; but one wonders what sort of a negative it is. Dr. Roger-Smith's 'Sources de l'Isère' was decidedly his best. All were good, but in 'The Grande Casse' and 'The Rochers de Charvet' he had included rather too much sky, which tended to dwarf the peaks and destroy the balance of the picture.

Miss Tiarks' 'Saasthal,' with a large, spreading tree in the immediate foreground, and 'A procession returning from the chapel to Saa Fee' were very attractive and well thought out.

We have seldom seen a finer picture of a crevassed glacier than that shown in Mr. Rudolf's 'Castor and Pollux, Evening View.' The lighting was quite admirable.

Canon Dawson's work is always most even and good. His best was 'The Corbassière Glacier,' a very artistic composition. The Rev. F. C. Bainbridge-Bell sent a remarkably pretty view of the Petites Dents de Veisivi seen through an opening in the pine forest. The Rev. Walter Weston showed a nice little picture of the Berglistock from the Rosenhorn.

Mr. Beauman and Mr. A. N. Andrews showed some good small prints, which, however, would have been more effective in larger dimensions. Mr. Beauman brings his skyline too much in the middle of the picture.

Two frames of small views in the Zermatt district shown by Mr. Tutton were perfect photographs, but too small to make any effect amongst so many enlargements.

Rockclimbing was well illustrated by several exhibits. Two particularly good ones were shown by Mr. H. C. C. Carr in 'The Crack Pitch on the Petit Clocher de Planereuse,' in which an enterprising lady climber was about to negotiate a somewhat fearsome fissure at the top of which a well-known member of the Club was comfortably seated holding the rope. The other was a well-chosen corner on the Aiguille du Géant. Captain Finch also sent an excellent picture depicting a climber descending a steep pitch on the Grépon. Mrs. Geoffrey Howard showed a delightful small enlargement showing a bit of the Egginergrat traverse, and from Mr. C. E. Thomson came two pictures of characteristic places on the Riffelhorn and Sorapis. Mr. Beauman's small print, 'On the Aiguille Javelle,' was good, but would have been considerably improved if he had included a little more of the chimney.

Four admirable telephotos were shown by Dr. Thurstan Holland. The two of the Matterhorn were unusually clear in definition. Another good example of this form of photography was Dr. Roger-Smith's 'Aiguille de la Za.'

Dr. Thurstan Holland also sent two of the most interesting exhibits in the room in silver prints, one of Mont Blanc from the Jardin and one of the Rhone Glacier, which were printed about 1856, both still perfectly fresh and clear. It was interesting to note the shrinkage which has taken place in the case of the Rhone Glacier.

Mr. Julian Osler showed a small collection of most successful autochromes.

The arrangements of the Exhibition were, as for so many years past, in the capable hands of Mr. Sydney Spencer. Few members realise the energy, forethought, and care which Mr. Spencer brings to bear on the preparation, necessarily limited to very few days, of an exhibition which gives to so many of us keen delight.

PROCEEDINGS OF THE ALPINE CLUB.

THE ANNUAL GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, W. 1, on Monday, December 12, 1921, at 8.30 p.m., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, Mr. Kenneth M. Cameron, Sir Henry H. Hayden, Mr. H. W. Holder (Member, 1886-1915), Mr. Eskild Jensen, Monsieur Marcel Kurz, the Rev. G. H. Lancaster, Mr. William W. McLean, Mr. Edward I. P. Pellew, Mr. Cornelis Tromp, and Dr. Arthur W. Wakefield.

The *PRESIDENT*, in accordance with the provisions of Rule 29, there being no other candidates, declared the following members nominated by the Committee to be duly elected as Officers of the Club and Members of Committee for 1922 :

As *President* : Professor J. Norman Collie, LL.D., F.R.S.

As *Vice-Presidents* : Mr. Godfrey A. Solly, and, in place of Mr. A. L. Mumm, whose term of office expires, Dr. Claude Wilson.

As *Honorary Secretary* : Mr. J. E. C. Eaton.

As *Members of Committee* : Mr. R. P. Bicknell, Major M. G. Bradley, Mr. E. V. Slater, Brig.-Gen. the Hon. C. G. Bruce, C.B., M.V.O., Mr. G. E. Howard, Mr. L. G. Shadbolt, Mr. Robert Corry, Mr. G. L. Mallory, and Mr. A. F. R. Wollaston, the last three named in the places of Professor E. J. Garwood, F.R.S., Mr. R. L. G. Irving, and the Rev. Walter Weston, who retire by effluxion of time.

It was proposed and seconded that Mr. R. S. Morrish and Mr. Reginald Graham be elected Auditors to audit the Club accounts for the current year. This was carried unanimously.

The PRESIDENT reported that the following Members had died since the last meeting, namely, Mr. Wm. Muir, elected in 1887; Sir George Savage, M.D., elected in 1878; Dr. A. M. Kellas, elected in 1911; Mr. H. S. Williams, elected in 1868; Colonel E. Clayton, elected in 1872; Mr. A. P. Boyson, elected in 1873; and Mr. W. A. Baillie-Grohman, elected in 1874.

In accordance with the notice given in the Secretarial Circular dated November 1, 1921, the PRESIDENT moved the following Resolution:

‘Resolved that all Ordinary Members be invited voluntarily to increase their Annual Subscription as from January 1, 1922, permanently, to Three Guineas, that all Members elected after December 12, 1921, shall pay an Entrance Fee of Four Guineas and an Annual Subscription of Three Guineas, and that Rule 7 be amended accordingly.’

After discussion this Resolution was seconded by Mr. Reginald Graham, and unanimously adopted by the Members present.

A vote of thanks to Mr. Sydney Spencer for his work in connexion with the Photographic Exhibition was heartily acclaimed.

Mr. G. A. HASLER then read a Paper entitled ‘The North-east Face of the Finsteraarhorn,’ which was illustrated by lantern slides.

At the conclusion of the Paper the PRESIDENT proposed a very hearty vote of thanks to Mr. Hasler, which was carried with acclamation, and the proceedings terminated.

THE ANNUAL PHOTOGRAPHIC EXHIBITION was held in the Hall of the Club from Monday, December 5, to Saturday, December 17, 1921. In connexion with the Exhibition an ‘At Home’ was held on Tuesday, December 13, when about 500 persons, Members and their friends, attended.

THE ANNUAL WINTER DINNER was held in the King’s Hall of the Holborn Restaurant on Tuesday, December 13, 1921, at 7 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair. There were present 270 Members and guests, among the latter being His Excellency Monsieur C. R. Paravicini, Swiss Minister; the Hon. Sir Edgar H. Walton, K.C.M.G., High Commissioner for the Union of South Africa; Lieut.-Col. E. M. Jack, C.M.G., D.S.O., R.E.; Colonel Howard Bury, D.S.O.; Mr. E. L. Somers Cocks; and Mr. Arthur R. Hinks, C.B.E., F.R.S.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, February 7, 1922, at 8.30 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, the Rev. J. A. H. Bell, Monsieur E. R. Blanchet,

Mr. Albert Hopkinson, Mr. R. I. Simey, Mr. C. M. Sleeman, Mr. H. N. P. Sloman, and Captain C. F. Stoehr, R.E.

The PRESIDENT said :—We have all heard with extreme regret of the death of Lord Bryce. He was elected a Member of the Club in 1879, and President in 1899. A man of world-wide reputation and a great traveller, he made his mark in literature and science early in life, and later established his pre-eminence as a statesman. He has died full of years and honours after a life of incessant activity.

It is with great regret that I have also to announce the deaths of the following Members, which have occurred since we last met :

Mr. Edward Hopkinson was foremost amongst British engineers, and carried out many important undertakings. At the time of his death he was Member of Parliament for the Clayton Division of Manchester, and he was always an enthusiastic climber both in Switzerland and the British hills. He was elected to the Club in 1887.

Mr. William Little was probably unknown to the majority of Members present. For a number of years he has been living in retirement in Cornwall, having had to relinquish his work at the Bar on account of deafness. He was elected a Member in 1878.

Mr. F. H. Cheetham has been a Member of the Club since 1867, but I regret that I cannot give you any details of his career as a climber.

I am sure everyone will grieve to hear of the death of Sir Alfred Bird, Bart., D.L., M.P., which occurred early this morning. I have only just seen the report of his death, and I understand that he was knocked down and killed by a motor-car late last night. He was elected a Member of the Club in 1891, and it was only last month that the honour of a baronetcy was conferred upon him.

Dr. Douglas W. Freshfield and the Rev. Canon W. C. Compton paid personal tributes to the memory of Lord Bryce. Dr. Freshfield said that his fame as a statesman would rest upon his work at Washington in cementing the friendly relations of the two great English-speaking nations of the earth.

Mr. T. H. SOMERVELL then read a Paper entitled 'Five Weeks of Good Weather in 1921,' which was illustrated by lantern slides.

A discussion followed, in which Captain J. P. Farrar, D.S.O., Mr. George Yeld, and Mr. Henry Symons took part, and the proceedings terminated with a hearty vote of thanks to Mr. Somervell, which was carried with acclamation.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, March 7, 1922, at 8.30 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, Mr. Bentley Beetham, the Rev. George Milner

Bell, Mr. John Bernard Meldrum, Mr. George Sutcliffe Bower, Mr. Eoghan O'Brien, and Mr. James Lamb Yeames.

The PRESIDENT said :—I regret to say that I have been informed of the death of a very old Member of the Club in the person of the Rev. J. K. Stone, better known as the Rev. Father Fidelis, who died at San Matteo, California, in October last, in his eighty-second year. He had done much wandering among the mountains, especially in the Cordilleras and the Andes. He enjoyed the friendship of the late Sir Leslie Stephen, by whom he was once described as the 'best walker' he had ever seen. He was elected a Member in 1860. His portrait appears in 'A.J.' xxxii. opposite p. 226, and a letter received from him as recently as January 1921 is published in 'A.J.' xxxiii. p. 453.

Yet another loss has been sustained in the death of the Rev. J. M. Gordon, elected in 1896, of whom an obituary notice will be published in due course.

The Hon. Secretary, Mr. J. E. C. EATON, presented the Accounts for 1921.

Sir ALEXANDER B. W. KENNEDY, LL.D., F.R.S., in proposing the adoption of the Accounts which had been just explained by the Hon. Secretary, said that he thought the Members would, in the first place, wish to congratulate Captain Farrar on the last number of the JOURNAL, whatever its cost might have been. In the second place, he would like to express his own feeling that, under the whole circumstances of the case, the Committee were to be congratulated on having got through so difficult a year with so small a balance on the wrong side—a balance which he did not think need cause the Members the least concern. He therefore had pleasure in proposing that the Accounts be received and adopted, and in moving this he asked the Members to join also in a vote of thanks to the Auditors, Mr. Ralph S. Morrish and Mr. Reginald Graham, for the trouble which they had taken in dealing with the matter.

Captain J. P. FARRAR, D.S.O., said :—It is quite obvious that the JOURNAL is, to a great extent, responsible for the deficit reported by the Hon. Secretary. I appreciate much his remarks and the kind words of Sir Alexander Kennedy. But deficits must be checked. We have discussed the matter carefully in Committee, and, provided no advance in costs takes place, I can safely undertake that the cost of the JOURNAL for this year shall not exceed £500, equal to a reduction of £86. I know I need not assure you that nothing shall be wanting on the part of Mr. Yeld and myself to produce a JOURNAL that shall be acceptable to you and shall be worthy of the high position of the Club.

The adoption of the Accounts was seconded by Mr. C. H. R. Wollaston, and carried *nem. con.*, and the vote of thanks to the Auditors was carried with acclamation.

The PRESIDENT gave a résumé of the work accomplished in

connexion with the equipment of the 1922 Expedition to Mount Everest. A full report is published in this number of the JOURNAL.

Mr. A. F. R. WOLLASTON then read a Paper entitled 'Personal Impressions of Tibet,' which was illustrated by lantern slides.

The PRESIDENT said:—I have learned a great deal from the most beautiful slides Mr. Wollaston has shown to us to-night concerning the country through which he travelled, and I feel sure that they have been greatly enjoyed by Members. I propose that a very hearty vote of thanks be accorded to Mr. Wollaston.

The vote of thanks was carried with acclamation, and the proceedings terminated.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, April 4, 1922, at 8.30 p.m., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

Mr. Henry John Sedgwick was balloted for and elected a Member of the Club.

The PRESIDENT said:—I regret to have to announce the deaths of Mr. T. Blanford and Mr. J. T. Wills.

Mr. Blanford was a very old Member of the Club, having been elected in 1860, and there are very few of his contemporaries left. An obituary notice will be published in due course.

Mr. J. T. Wills was elected in 1881. He was, as you all know, a son of the late Mr. Justice Wills, and brother of our present Member, Dr. W. A. Wills. In his younger days he was a very strenuous climber, one of his feats being an ascent of the Matterhorn in record circumstances.

Mr. G. A. SOLLY then read a paper entitled 'British Mountaineering; its Development and Contrasts,' which was illustrated by lantern slides.

A discussion followed, in which Mr. W. P. Haskett-Smith, Mr. A. L. Mumm, and Mr. H. G. Willink took part.

The PRESIDENT said:—We are all indebted to Mr. Solly for his extremely interesting Paper, and I now ask you to pass a very hearty vote of thanks to him.

The vote of thanks was carried with acclamation.

CORRIGENDA.

Vol. xxxiii. p. 330, footnote, for *Arvers* read *Berthaut* (not 'Duthaut' as stated, vol. xxxiv. p. 194).

Vol. xxxiv. p. 69. By a regrettable error the names of Sir James Ramsay and Mr. Crawford were transposed.

P. 103, line 14. The first ascent of Mt. Terrier was made in 1905 by the Austrian mountaineers, Herren E. Hacker, Sattler and Freiherr v. Saar (*Zeitschrift D. u. Oe. A.V.* xl.).

P. 104, line 11, read *Chydenius*.

P. 112. The date of Sir Edward Davidson's ascent of the Mommingspitze is 1902.

P. 133. The first winter ascents of the Vallaisan summits over 4000 m.

M. Marcel Kurz made also winter ascents of Breithorn, Lyskamm, Monte Rosa, Alphubel.

P. 144, 3rd par., read *Flégère*.

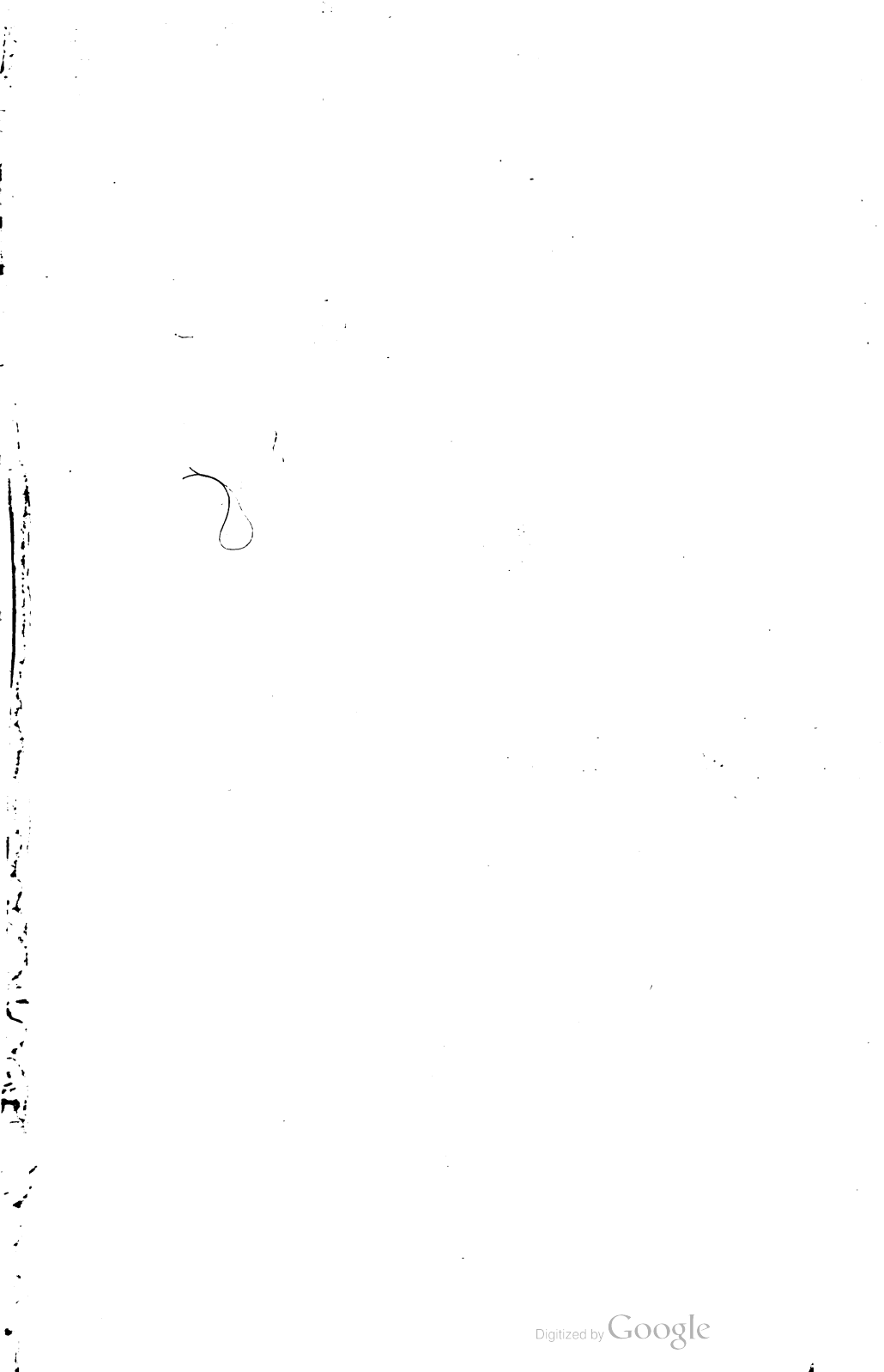
THE ALPINE JOURNAL.

THE Committee have now fixed the prices of the back numbers of the ALPINE JOURNAL as follows :

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THE EARLY HISTORY OF THE COL DU GÉANT AND THE
LEGEND OF THE COL MAJOR.

By HENRY F. MONTAGNIER.

(Continued from 'A.J.' xxxiii. 340.)

I. THE LEGENDARY PASS.

WE have now to consider a curious tradition which persisted among the inhabitants of both Chamonix and Courmayeur for more than two centuries. Long before the year 1787, in which the first well-authenticated passage of the Col du Géant was effected, travellers in the district were gravely assured by the natives that there existed formerly a direct route across the chain of Mont Blanc, by means of which the journey between the two villages could be made with ease in six hours. In Courmayeur this route was supposed to have led 'over the glaciers of Mont Fréty'; while in Chamonix the natives pointed vaguely to the 'Valley of Ice' beyond the Montanvert, and asserted that within comparatively recent times their ancestors used to set out in that direction on their way to attend Mass in Courmayeur. But none of the travellers ever had the good fortune to meet anyone who had actually crossed this mythical pass himself, for the simple reason that as far back as the tradition can be traced they were invariably informed that it had been abandoned many years before their visit in consequence of certain changes in the glaciers: in fact, our knowledge of it is limited to a few brief and contradictory reports of stories related to credulous strangers by their guides. The tradition thus recorded sounds highly improbable, to say the least, but it has been accepted nevertheless by many writers on Alpine history during the last seven or eight decades as conclusive evidence of the use of the Col du Géant in very early times.

As far back as 1887 we read in Goffredo Casalis' great
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geographical dictionary of the States of the King of Sardinia that :

‘ . . . fra i montanari di Chamonis si conserva la tradizione, che da questo luogo corresse in altri tempi una strada, la quale per lo Montanverde, ed i casolari de’ Boschi girando a libeccio in una valle, che ora è dai ghiacci intieramente chiusa, riusciva al monte detto il Gigante ; onde tragittavasi a Valferizzo.’ (Vol. iv. p. 548.)

Charles Godefroy writes in 1840 in his *Notice sur les Glaciers* (p. 62) :

‘ Il n’y a guère que 100 ans qu’on se rendait régulièrement de la vallée de Chamonix à Cormayeur en Piémont, par le col du Géant, une des épaules du Mont-Blanc ; aujourd’hui ce passage, devenu non-seulement difficile, mais dangereux, ne permet plus aucune communication régulière.’

And in J. L. Manget’s *Nouvel Itinéraire Descriptif de Chamonix, le Mont-Blanc*, etc. (Geneva, 1859, p. 179), we read :

‘ A une époque déjà fort ancienne, avant que le col du Géant fût aussi complètement encombré par les glaces qu’il l’est de nos jours, il offrait aux habitants de la vallée de Chamonix un passage praticable durant une assez grande partie de l’année, pour se rendre en Piémont. Cette voie de communication s’est insensiblement fermée, longtemps avant l’époque où les Alpes centrales ont commencé à être explorées par les géologues, et à devenir un objet d’intérêt pour les touristes.’

Many years later Sig. Luigi Vaccarone, the erudite Italian Alpine historian, expressed in the *Bolletino* of the C.A.I. (1880, p. 81) his conviction that the Col du Géant must have afforded, in not very remote times, an easy means of communication between Chamonix and Courmayeur. M. Charles Durier, on the other hand, dismissed the story of the abandoned route between the two villages as a mere legend unworthy of serious consideration. In view of the fact that from its foundation in 1091 until 1519 the Priory of Chamonix was under the jurisdiction of the monastery of Saint-Michel de la Cluse on the Dora Riparia, near Turin, he saw in the tradition only a ‘... souvenir confus de l’acte qui constituait le prieuré une annexe d’une abbaye italienne. A la longue, l’habitant de Chamonix n’en retint qu’une chose : il avait eu des attaches religieuses de l’autre côté des monts. Or, pour lui, l’autre côté des monts c’était le haut val d’Aoste ; de lien religieux, il n’en imagina pas d’autre que celui qui rattache le fidèle à

sa paroisse. La cité de Courmayeur, *Curia major*, fit oublier le monastère de l'archange et la rupture des relations s'expliqua par l'envahissement des glaciers.' (*Le Mont-Blanc*, 1877, p. 45.)

In a later edition of his popular monograph on Mont Blanc, M. Durier added in a footnote :

'Cependant la tradition est généralement acceptée. Elle a le rare privilège d'être accueillie avec faveur par les ignorants que le merveilleux séduit toujours, et par les savants comme un témoignage des vicissitudes du globe.' (1881 edition, p. 41.)

Mr. Coolidge, on the contrary, regards the existence of the old route as an established fact :

'Si j'ai jamais douté de l'identification du "Col Major" avec le Col du Géant actuel [he writes in the *Jahrbuch* of the S.A.C., 1901, p. 266] le compte rendu si animé de la tentative à le traverser par P. A. Arnod en 1689, et son témoignage quant à la tradition de son passage antérieur, aussi bien que les données de maints autres témoins dignes de foi, m'ont tout à fait converti. Il me semble impossible de nier que depuis plusieurs siècles ce col a été connu comme moyen de communication entre Chamonix et Courmayeur, et cela comme un simple fait historique, sans invoquer une dépendance prétendue historique de l'un endroit sur l'autre.'

The tradition to which Mr. Coolidge refers in the above citation is mentioned for the first time in a memoir on the passes leading into the Aosta Valley, compiled by a local official named Phillibert-Amédée Arnod during the last two decades of the seventeenth century. Descending the Italian Val Ferret, Arnod writes :

'A droite de Hameyron¹ se prenent les glaciers et monts inaccessibles du costé du Chablais et Faucigni sans aucun passage quelque ce soit jusques à la sommité de la Laix Blanche [the Col de la Seigne]; si bien que par tradition de père à fils l'on prenoit autres fois un passage à droiture par dessus les glaciers de Mont-Fréty pour descendre en Chamonix en Faucigni. Je pris trois bons chasseurs en 1689, avec des grappins aux pieds, des hâchons, et des crocs de fer à la main, pour se faire pas sur la glace : il n'y eut pourtant jamais moyen de pouvoir monter n'y avancer à cause des grandes crevaces et interruptions qui se sont faits depuis bien d'années.'²

¹ The chalets of Hameyron (or Ameiron) were destroyed by a landslide on September 12, 1717. See Sig. Vaccarone's *Le Vie delle Alpi Occidentali negli Antichi Tempi*, Turin, 1884, p. 118.

² Part of this extract was printed for the first time by Sig. Vaccarone in the *Bolletino* of the C.A.I., 1880, p. 34. The entire

In these often-quoted lines we have an account of the earliest recorded attempt to force a passage across the chain of Mont Blanc between Courmayeur and Chamonix. The mention of the 'glaciers of Mont Fréty' seems to point to the depression in the ridge now known as the Col du Géant as the pass Arnod and his companions endeavoured to open; indeed, Mr. Coolidge even goes so far as to suggest that they actually crossed that pass and descended to the great ice-fall of the Glacier du Tacul, indicated on the Carte Barbey as 'Les Séracs du Géant.' Could we accept this interpretation of the text of Arnod's quaint narrative, we must concede to his party the honour of having made the first authentic passage of the Col du Géant. But unfortunately for his interpreter Arnod says that at their turning-point they were unable either to ascend or advance, from which I think it is clear that they failed to reach the summit of their pass.³

There is one statement in the above extract to which I desire to call particular attention. Arnod tells us that in his time—that is to say, in 1689—there was no practicable route crossing the chain of Mont Blanc between the chalets of Hameyron and the Col de la Seigne; and he adds that according to a tradition passed down from father to son, presumably among the natives of Courmayeur, it was formerly possible to go from that village to Chamonix by a route which led over the 'glaciers of Mont Fréty.' It would seem from this that the abandoned route, assuming that it was not a mere myth, had certainly not been crossed within seventy-five or a hundred years of the date of Arnod's attempt to reopen it.⁴ Yet on

text of Arnod's memoir will be found in Mr. Coolidge's *Josias Simler et les Origines de l'Alpinisme jusqu'en 1600*, Grenoble, 1904, pp. *267–327. See also Mr. Freshfield's *Life of H. B. de Saussure*, London, 1920, p. 243; and M. Henri Ferrand's paper on the Géant (col and aiguille) in *La Montagne*, 1911, pp. 617–618.

³ M. Durier writes in his monograph (1881 ed. p. 42): 'Si, au XVII^e siècle, on en était aux tentatives, c'est qu'apparemment le chemin n'était pas ouvert. Qu'on vienne à découvrir d'autres documents écrits de l'époque et on verra ce qu'il restera de ces traditions de passage au col du Géant et ailleurs.'

⁴ The knowledge of such a route could hardly have dwindled down to a vague tradition in a shorter lapse of time. In 1908—a hundred and twenty-one years after de Saussure's ascent of Mont Blanc—there were still several old men living in the Chamonix Valley who remembered vividly the last survivors of the great naturalist's expedition.

Sanson's map, dated 1647, barely forty-two years earlier, we find the Col Major indicated not only as a direct route between Courmayeur and Chamonix, but apparently as the usual route for travellers proceeding from Aosta to Bonneville; and Arnod himself might have consulted a number of maps of much later date on which it is shown as an important highway. This fact alone, it seems to me, proves beyond all doubt that the Col Major was not, as Mr. Coolidge persists in believing, the Col du Géant.⁴⁴

The next witness mentioned by Mr. Coolidge is an obscure personage named Ribel, who was reputed to have made the journey from Geneva to Turin about 1740 as a mail carrier in remarkably fast time. In a letter published in the *Journal de Genève* of September 15, 1787, the Genevese naturalist Henri-Albert Gosse suggested that Ribel might possibly have used the Col du Géant as a short cut :

' Ne seroit-ce pas par cette route [he wrote], qu'un nommé Ribel, d'abord Coureur, puis Tonnelier à Genève, avoit porté avec la plus grande célérité des lettres de Genève à Turin, il y a une cinquantaine d'années environ. Les renseignemens que je m'empressai de demander à cet homme extraordinaire, peu de tems avant sa mort, sur ce passage, me porteroient presque à le croire.' ⁵

And in a footnote Gosse adds :

' Ce Ribel m'a dit (ce qui m'a été attesté par plusieurs de ses contemporains) qu'il avoit fait cette traversée dans l'espace d'un jour et demi. Il alloit de Genève à Francfort-sur-le-Main plus vite que le Courier.'

It is evident from these extracts that Gosse himself was by no means certain about the matter, for he says the information he obtained from Ribel, shortly before the latter's death, ' would almost lead him to believe it.' ⁶ But this absurd story

⁴⁴ See Note 4, page 350.

⁵ The same issue of the *Journal de Genève* contains Bourrit's narrative of his passage of the Col du Géant on August 28, 1787, the manuscript of which had been submitted to Gosse.

⁶ Gosse also mentions Ribel in a letter dated September 19, 1779, as ' ce fameux marcheur qui alloit par les glaciers en peu de tems à Turin.' See *Un Genevois d'Autrefois*, Henri-Albert Gosse (1753-1816), by Mlle. Danielle Plan, Geneva, 1909, p. 80. Bourrit evidently refers to Ribel in the following passage in his *Description des Cols et Passages des Alpes*, 1803, vol. i. pp. 113-114 : ' Une

nevertheless has been accepted as an historical fact by several of our most eminent authorities. M. Durier wrote in 1881⁷: 'L'exploit de Ribel paraît authentique.' In the new edition of Ball's *Alpine Guide* ('The Western Alps,' 1898), 'reconstructed and revised by the Rev. W. A. B. Coolidge,' we read on p. 364: 'It [the Col du Géant] seems to have been certainly traversed about 1740 or so by one Ribel, a messenger carrying letters from Geneva to Turin.' M. Louis Kurz is more prudent, for in the recent edition of his *Guide de la Chaîne du Mont-Blanc*, published in 1912, he writes (p. 148): 'Le col a peut-être été franchi en 1737 par un courrier nommé Ribel.' Mr. Coolidge, however, regards Ribel as a trust-

opinion assez répandue soit à Turin soit à Genève, était celle qu'un homme de la dernière de ces villes avait été à Turin dans trente-huit heures en traversant les gorges des Alpes, et souvent le roi de Sardaigne l'avait entendu dire. Ce prince, voulant savoir si cette opinion avait quelque fondement, désira s'en entretenir avec l'historien des Alpes; et celui-ci après quelques explications avec le prince, résolut d'aller à cette recherche, quelques qu'en pussent être les peines et les difficultés.' Bourrit was received by Vittorio-Amadeo III. in Chambéry in May 1775, on the occasion of the marriage of the Prince of Piedmont to a sister of Louis XVI. As a result of this audience, he says he passed an entire summer exploring the valleys and gorges in the neighbourhood of the Cols du Bonhomme and du Petit St. Bernard in search of the short route. At one time he thought he had found it on 'le grand glacier de la Tuille,' from which he fancied he saw the Po, but he soon discovered his mistake. 'Tournant donc ses regards du côté de la Val-d'Aost,' he continues, 'il lui sembla que la direction de cette vallée l'approcherait le plus de son but; mais il fallait y pénétrer par d'autres passages que ceux qui étaient connus et il n'y avait d'espoir que par la mer de glace du Montanvert. Tel fut le motif de ce voyage [his passage of the Col du Géant in 1787] dans lequel il faillit de périr avec son fils et ses guides.' This version was written, however, in 1803, long after the publication of de Saussure's *Voyages dans les Alpes* had made the Col du Géant the most celebrated glacier pass in the Alps; and I am inclined to suspect that in it Bourrit greatly exaggerates his efforts to discover the short route from Geneva to Turin. In 1775 Ribel was still living in Geneva, and the 'historien des Alpes' might easily have appealed to him for information. It is a significant fact, moreover, that in his *Nouvelle Description des Glacieres et Glaciers de la Savoie*, published in 1785, Bourrit says nothing about the journey undertaken at the request of the King of Sardinia.

⁷ See *A.J.* ix. pp. 86-89, in which M. Durier has reprinted the entire text of Gosse's letter, and *Le Mont-Blanc*, 1881 ed., p. 147.

worthy witness, for in his paper in the *Jahrbuch* of the S.A.C., 1901, p. 268, I find, under the heading 'Col Major, the following entry: 'Vers 1740. Traversée par Ribel'; and again in the *Revue Alpine*, 1911, p. 230, he states that the Col du Géant was actually crossed about 1740. As a matter of fact, this is simply an assumption on Mr. Coolidge's part, for it is at least doubtful whether Ribel was ever even in the immediate neighbourhood of either Chamonix or Courmayeur. In the course of a good deal of research among the Genevese archives, I have succeeded in bringing to light only the following record of his death, from which it would seem that he was either a German or a Swiss-German Protestant:

'Adam Ribel, habitant, tonnelier, mort de caducité à Bémont, âgé de 83 ans, le 13 septembre 1779.'

Both Wyndham and Martel mention the legendary pass in the celebrated letters describing their visits to the Chamonix Valley. The former writes in 1741:

'Our Guides assured us, that in the time of their Fathers, the *Glaciere* was but small, and that there was even a Passage thro' these Valleys, by means of which they could go into the Val d'Aoste in six hours: But that the *Glaciere* was so much increased, that the Passage was then quite stopped up, and that it went on increasing every Year.'

Here we find for the first time the statement that the journey from Chamonix to Courmayeur by the old route required but six hours.

Martel, who would be able to converse more readily with the guides, was in Chamonix the following year with a party of Genevese, and he gives a different version of the tradition:

'The *Glacieres* [he writes] stretch by diverse Openings and Vallies, as far as *Courmayeu*, in the *Val d'Aosta*, but not by an uninterrupted Communication as formerly, by reason of the falling down of some Pieces of the Mountain: And therefore it is impossible to go from *Chamouny* to Courmayeu, by the Valleys of the *Glacieres*.'⁸

⁸ *An Account of the Glacieres or Ice Alps in Savoy*, etc., London, 1744, pp. 10 and 24. As M. Théophile Dufour, the eminent Genevese historian and scholar, has shown that this little work was translated from the French, it is perhaps well to give the original text, which differs slightly from the translation. That of Wyndham reads: 'Nos guides nous assurèrent que, du temps de leurs pères,

We have seen that Arnod, in 1689, found the abandoned pass impracticable on account of the great crevasses and interruptions in the glacier, which he says had formed many years earlier; and Wyndham, in 1741, says it was abandoned

la glacière étoit peu de chose et que même il y avoit un passage par ces vallées, par lequel on pouvoit, en six heures de temps, entrer dans la Val-d'Aoste, mais que la glacière avoit accru considérablement, que le passage étoit à présent bouché et que la glace s'augmentoît toutes les années.' And that of Martel: 'Les glaciers s'étendent par diverses gorges et vallées jusqu'à la vallée de Courmayeux. Mais on ne peut suivre cette route, comme elle l'a été ci-devant, à cause des éboulements de quelques morceaux de montagne. C'est pour cela qu'il est à présent impossible d'aller de Chamougnny à Courmayeux par la vallée des glaciers.' (See the original text of these two narratives published, with an introduction and notes by M. Dufour, in the *Echo des Alpes*, 1879, pp. 96 and 251.)

The manuscript published by M. Dufour contains, at the end, a number of questions proposed 'par un curieux à ceux qui ont fait le voyage aux glaciers.' Two of these refer to the Col Major: 'Va-t-on aisément de Chamougnny à Col Major et en combien d'heures de chemin?' and 'La montagne qui vers l'orient forme le bout de la vallée de Chamougnny est-ce le Col Major ou le Mont Mallay?' The answer to the first is: 'L'on ne peut aller à présent de Chamougnny à Courmayeux par les glaciers, comme l'on faisoit autrefois, à cause des avalanches des montagnes qui ont rompu le chemin.' And to the second: 'La montagne au bout de la glacière, qui fait point de séparation de la glacière qui va à Courmayeux et de l'autre, qui va dans le Valais, est nommé l'Echaire. L'on va par une de ces pointes à Courmayeux et par l'autre à Tryant dans le Valais, paroisse de Martigny.' The peak in question here seems to be the Aiguille du Tacul, and 'l'Echaire' is probably a corruption of Leschaux. Mr. Coolidge informs us that 'l'Echaire' may be a variant of 'Argentière' or 'Leschaux' or a phonetic form of 'Géant.' (*J.S.A.C.*, 1901, pp. 263 and 270.)

On the little map entitled *Le Cours de l'Arve Contenant le Plan des Glaciers de Chamougnny & des plus hautes Montagnes* which accompanies the 1744 English edition of the Wyndham-Martel letters, Martel places the 'Col Majou' due S. of the 'Mont du Tour' (presumably the Aiguille du Tour), and fully eight or nine miles to the E. of the 'Mont-Malay' (the Aiguille du Géant). This, I think, proves conclusively that whatever he may have meant by the Col Major, he did not understand it to lie to the W. of the Aiguille du Géant. The pass he indicates under this name cannot therefore be identified as the Col du Géant. Martel was, I may add, the first cartographer to publish a map of the Chamonix district based upon observations made in person.

in consequence of the increase of the glaciers ; while Martel tells us that it was ' stopped up ' by a landslip.

The next reference to the tradition occurs in the narrative of a visit to the Chamonix Valley in 1762 by the Duc de la Rochefoucauld-Enville.⁹ In his description of the Mer de Glace the Duc writes :

' Ce qui est certain, c'est qu'il y a environ quarante ans il y avait une communication établie entre Cormayeul, petit village du val d'Aoste, et Chamouny. Voici à peu près le chemin qu'ils tenaient. Ils montaient le Mont Logan qui est de l'autre côté du glacier des Bois (c'est le glacier sur lequel nous fûmes), ils passaient derrière l'Aiguille du Dru, montagne placée exactement vis-à-vis le Mont-Tanvert, trouvaient là, derrière, la grande vallée de glace qu'ils traversaient, et descendaient dans le val d'Aoste aux environs de Cormayeul par un glacier semblable à celui que nous vîmes ou bien par quelque montagne voisine. Le chemin était à peu près de six à sept heures. Un frère d'un de nos guides est le dernier qui ait fait ce chemin. Un changement arrivé subitement dans la vallée, qui y est fort sujette, lui rendit le retour impraticable par cette route. Il fut obligé de revenir par le Mont Saint-Bernard et le Valais, ce qui fait un tour considérable.'

Mr. Coolidge quotes this extract as an historical document of great importance, and he appears to entertain no doubt whatever that the pass described therein was the Col du Géant, and that it was actually crossed by the brother of one of M. de la Rochefoucauld-Enville's guides. But M. Durier, who also prints it in the appendix of his monograph, interprets it as referring to the Col Dolent :

' Ici, ce n'est plus du col du Géant qu'il s'agit [he writes] (le guide n'y songe même pas pour s'en revenir), mais du glacier d'Argentière et du col Dolent, l'un des plus difficiles de la chaîne, souvent même infranchissable, et dont la traversée, de Chamonix à Courmayeur, demande près de vingt heures. C'est ainsi que, plus les témoignages de cette sorte présente de précision, moins ils se trouvent mériter de foi. La conclusion est facile à tirer.'¹⁰

For my part I am unable, despite Mr. Coolidge's high authority, to see how a party setting out by Lognan and passing

⁹ Published in the *Ann. du C.A.F.*, 1893, pp. 458-495, by M. Lucien Raulet.

¹⁰ *Le Mont-Blanc*, 1897 ed., pp. 418-419.

behind the Dru (as seen from the Mer de Glace) could possibly be bound for the Col du Géant.¹¹ The Duc states, moreover, that a brother of one of his guides was the last to make the journey by the route in question, and as he speaks of him in the present tense, it is evident that he understood the man to be still alive at the time of his visit. This is the weakest point in the story, for if there were a man living in the Chamonix in 1762 who could truthfully say that he had crossed the Col du Géant some forty years earlier, it is utterly inconceivable that de Saussure, who was there in 1760 and 1761, and Bourrit, whose first visit to the district was made in 1765, should never have heard of so remarkable a feat. De Saussure, in his *Voyages dans les Alpes* (vol. vii. p. 357), says his attention was first attracted to the Col du Géant by Charles-François Exchaquet, the young Vaudois who made the first passage by a traveller, and he describes it as 'la route nouvellement découverte, qui conduit de Chamouni à Courmayeur, en passant par le Tacul.' It is of course quite possible, as Mr. Freshfield has suggested,¹² that the Duke's text may be a mis-reported account of some other pass, such as the Col du Tour, but on the whole it appears to me much more likely that the guides were merely imposing upon the noble traveller's credulity.

A Genevese clergyman named André-César Bordier, who visited Chamonix in 1772, is also quoted by Mr. Coolidge. In the narrative of his journey Bordier tells of meeting in Sallanches

'... un Capucin homme d'esprit (comme il y en a dans tous les Etats). Il nous fait tout voir hormis son église. Il nous dit avoir traversé sur la glace de la Cité d'Aoste à Chamouni dans 14 heures de marche.'¹³

¹¹ It is only fair to quote Mr. Coolidge's comments on the quotation in question. 'En le lisant attentivement,' he writes, 'on verra qu'il ne peut pas s'agir (comme l'avait pensé M. Durier ...) du col du Mont Dolent: même si l'on n'interprète pas ces phrases d'une montée depuis Lognan, puis de là derrière le Dru, il est clair que le rapporteur croyait que par le glacier de l'Argentière on rejoignait en haut la grande vallée de glace, dont il vient de parler, et qui descend entre le Mont Blanc et l'Aiguille du Midi, c'est-à-dire qu'on se rendait du glacier de l'Argentière au glacier de Talèfre et de là au glacier du Tacul. D'ailleurs l'itinéraire du Col du Mont Dolent ne débouche pas "aux environs de Courmayeur" mais tout à fait au fond du Val Ferret italien' (*J.S.A.C.*, 1901, p. 270).

¹² *Life of H. B. de Saussure*, p. 243.

¹³ *Voyage Pittoresque aux Glaciers de Savoye, fait en 1772. Par Mr. B.*, Geneva, 1773, pp. 289-290. On p. 254 of this little volume

I am loth to cast doubt upon the story told by this worthy monk to his Protestant visitor, but I find it incredible. The distance from Aosta to Courmayeur is 23 miles, with a rise of 2105 ft., let us say six hours' walking; thence to Chamonix by the Col du Géant would require at least ten hours more, a total of about sixteen hours exclusive of halts. I venture to say that not many active climbers of the present time would relish the idea of a 23-mile walk before crossing a glacier pass 11,000 ft. high, and it appears to me extremely unlikely that a Capuchin should have done so in the year 1772. M. Kurz is evidently of the same opinion, for in his excellent guide-book he says a Capuchin of Sallanches *pretended* to have accomplished this feat. But in the *Revue Alpine* (1911, p. 230) Mr. Coolidge makes the unqualified statement that the Col du Géant was crossed in 1772, from which I conclude that he accepts this decidedly mythical exploit as an established fact. If the Capuchin really made the passage of the Col du Géant, how is it that the inquisitive Bourrit, who was in Chamonix that year and who was keenly interested in the search for the legendary pass, never heard of so remarkable an expedition? It would also be interesting to know how Mr. Coolidge succeeded in ascertaining the precise date of this alleged journey from Aosta to Chamonix over the snow-fields. Bordier merely reports a conversation which took place in 1772, and there is nothing to show that the journey was made in that year or forty years earlier.

Dr. John Moore, in his account of a visit to Chamonix in 1773, gives the following version of the tradition :

'... the oldest inhabitants of Chamouni remember the Glaciers when they were much smaller than at present; and also remember the time when they could walk, from the Valley of Ice to places behind the mountains, by passages which are now quite choked up with hills of snow, not above fifty years old.'¹⁴

Bordier mentions the legendary pass : 'D'un côté c'est une tradition constante que les anciens habitants de Chamouni alloient, dans six heures de tems, à Col Mayor, ou Cormayeu, dans la Val d'Aoste, par une route que les glaces occupent maintenant derrière le Montanvert.' Evidently it did not even occur to him that the Capuchin of Sallanches might have crossed from Aosta to Chamonix by this route.

¹⁴ *A View of Society and Manners in France, Switzerland, and Germany*, etc., 8th ed., London, 1793, vol. i. p. 216. I am able

By this time the tradition had become a common topic of conversation among the visitors to Chamonix and their guides, and the rediscovery of so short and convenient a route to Courmayeur soon came to be regarded as a problem second only in interest and importance to the conquest of Mont Blanc. De Saussure, it is true, seems to have taken little interest in the search, for in his published works, as well as in his private correspondence and journals which I have had the privilege of examining, I fail to find the slightest reference to the subject. But for his fellow-citizen Marc-Théodore Bourrit the tradition seems to have possessed from the outset a singular fascination. In his first work on the glaciers of Savoy, published in 1773, Bourrit mentions the tradition in much the same terms as Wyndham thirty-one years earlier :

‘ Les vieillards de *Chamouni* [he writes] assurent qu’autrefois l’on pouvoit pénétrer de l’extrémité de cette glacière [the Mer de Glace] à la *Val-d’Aoste*, ce que l’accumulation des glaces a rendu à présent impossible.’¹⁵

The following year (1774) he observes that it would be interesting to go to the ‘ haut du Tacul ’ (in other words, to the ridge rising to the S. above the Glacier du Tacul). From there he thought that :

‘ ... l’on pourroit y découvrir une partie de l’*Allée Blanche*, qui des bases du *Mont-Blanc*, s’étend jusqu’à *Cormayeur* : on pourroit même y observer encore l’endroit par où l’on passoit autrefois pour pénétrer dans ce pays.’¹⁶

On August 18, 1774, Bourrit made the ascent of the Crammont from Courmayeur, accompanied by the Chamonix guide Pierre Simon and a local chamois-hunter named Jean-Laurent

to fix the date of Dr. Moore’s visit to Chamonix by the fact that he says in vol. i. p. 167, that during his stay in Geneva a ‘ Mr. Moses Maudrier ’ was elected King of the Arquebusiers. My friend M. Charles Roch, assistant archivist of the Canton of Geneva, informs me that ‘ Maurice Maudrier ’ won that distinction on August 3, 1773. This also settles the date of the attempt to ascend the Dru by the young Duke of Hamilton and Mr. Grenville mentioned by Dr. Moore (vol. i. pp. 202–203).

¹⁵ *Description des Glacieres, Glaciers & Amas de Glace du Duché de Savoye*, Genève, 1773, p. 44.

¹⁶ *Description des Aspects du Mont-Blanc*, etc., Lausanne, 1776, p. 16. This volume is in the form of a series of letters written during a tour of Mont Blanc in 1774.

Jordanay (dit Patience). While on the summit his thoughts turned naturally to the legendary pass :

‘En contemplant tous les *gluciers* qui descendent de la *chaîne* de ces montagnes, & des *aiguilles* qui les dominent [he writes] je cherchois à découvrir l’endroit par où les habitants de *Chamouni* pénétraient autrefois dans la *Val-d’Aoste*. Aidé de mon nouveau guide, nous remarquâmes en effet par où ils entroient, & les habitants de *Cormayeur* montent encore quelquefois jusqu’au sommet de cette chaîne, d’où ils ont la vue de toute la vallée de glace du *Montanvert*, mais où il ne leur est plus possible de descendre.’¹⁷

This discovery led to another of scarcely less interest, namely, that the peak known in the Aosta Valley as the Mont Mallet was none other than the Aiguille du Géant which he had so often seen from the Montanvert.

Again in 1783 we find Bourrit on the Couvercle observing the great crevasses of the Glacier de Tacul, which he says are ‘si effroyables qu’elles font désespérer de retrouver jamais la route qui conduisoit à la Val-d’Aoste.’¹⁸ And in the same volume we learn that his guide Jordanay had attained sometime before that date a point on the ridge which he thought was the abandoned pass :

‘C’est derrière cette vallée [the Mer de Glace] [writes Bourrit], qu’est situé le district de Cormayeur, pays peuplé et fertile de la Val-d’Aoste ; sa distance de *Chamouni*, n’est tout au plus que de huit lieues ; or la tradition des

¹⁷ *Ibid.* p. 74.

¹⁸ *Nouvelle Description des Glacieres et Glaciers de Savoye*, Genève, 1785, pp. 106 and 72. M. l’Abbé Clappesson, Curé of Courmayeur, informs me that Jordanay died in 1824, at the age of 85. The following note appears on the margin of the parish register of deaths : ‘Patience, guide de Mr de Saussure Naturaliste, sur le Mont-Blanc.’ He was employed by the great naturalist during the latter’s first visit to Courmayeur in 1767, and again in 1774 on the ascent of the Crammont, a few weeks before Bourrit’s expedition. See *Voyages dans les Alpes*, 8vo ed., vol. iv. pp. 57 and 82.

Paccard’s idea that courts of justice were formerly held in Courmayeur may possibly be due to the following note in Moréri’s *Grand Dictionnaire Historique*, Bâle, 1731, vol. i. p. 431 : ‘Cormayeur, la Curia major des Romains, parce qu’ils y tenoient un siege de justice pour ceux qu’ils y faisaient travailler aux mines.’

habitans des deux pays porte, qu'autrefois ils se communiquoient en passant par le milieu de la vallée de glace; & le greffier de *Chamouni* que j'ai cité, entre les mains duquel sont les anciens documents, me l'a confirmé en ajoutant que sa vallée étoit anciennement du ressort de *Cormayeur*, dénomination qui, selon lui, dérive de *cour* majeure, parce que c'étoit-là que se tenoient les assises des juges, & que les procès des Chamounards se terminoient. A ce témoignage j'ajouterai celui du Sieur Patience, de la grande maison de *Cormayeur*, lequel étant monté à la chasse des bouquetins, du côté du mont Mallet, découvrit les environs de notre glacière par une gorge qu'il estime avoir été l'ancien passage. D'après ces témoignages il faut en conclure elle étoit moins affreuse, moins sauvage & moins couverte qu'autrefois de glace.' ¹⁸

The 'greffier' of Chamonix mentioned by Bourrit was the Royal Notary of the valley, Joseph Paccard, the father of the young physician who made in 1786 the first ascent of Mont Blanc. The old notary, however, was certainly mistaken in believing that his village was ever a dependency of the parish of Courmayeur. The Priory of Chamonix was, it is true, subject to the Abbey of Saint-Michel de la Cluse in Piedmont from its foundation in 1091 until 1519, when it was transferred to the Chapter of Sallanches. But two centuries later the natives retained only a dim recollection of the fact that they were formerly subjects of a monastery on the S. of the Alps. 'Ce fut,' writes M. André Perrin, 'l'origine de la croyance que Chamonix n'avait pas d'église, avant l'établissement du prieuré, et qu'il dépendait, au spirituel, de la paroisse de Courmayeur où ses rares habitans se rendaient aux offices. Nous citons cette légende, parce qu'elle a été acceptée par quelqu'écrivains, pour prémunir contre une erreur qu'il est inutile de discuter. Les communications n'auraient pu exister que par le col du Géant dont les difficultés et les dangers constituent, encore aujourd'hui, un sérieux obstacle pour des alpinistes déterminés.' ¹⁹

We hear again of Jordanay in Dr. Paccard's celebrated MS. Journal. In June 1784 the doctor, accompanied by the guide Pierre Balmat, bivouacked 'en deçà de la Noire,' and set out the following morning to try to discover a route to the summit of Mont Blanc from the E.:

¹⁸ See Note 18, page 359.

¹⁹ *Histoire de la Vallée et du Prieuré de Chamonix du Xe au XVIIIe Siècle*, par André Perrin, Chambéry, 1887, p. 210.

‘ Nous avons fait quelques pas en avant jusque près de la Noire [he writes], nous avons passé un grand nombre de fentes couvertes. La neige commençait à être molle et n’ayant fait que le chemin de deux portées de carabine en deux heures nous avons pris le parti de redescendre, pour n’être pas exposés aux dangers des fentes couvertes de neige que le soleil avoit amollie. L’accès du Mont-blanc de ce côté est difficile ... il a apparence que c’est plus facile par la vallée du fond où près de Cormayeur par le même passage qui paroît au delà de la Noire, où l’on dit que *l’hôte Abondance de Cormayeur* est venu à la poursuite d’un bouquetin et d’où il dit avoir vu toute la vallée du Bayer.’²⁰

Finally, in 1787, the Genevese mineralogist Berthoud van Berchem writes in his account of an excursion to the Jardin :

‘ A droite [from the Couvercle] je vois le Tacul [glacier], au fond duquel je distingue le col qui conduit à Cormayeur, par une route hasardeuse, difficile et abandonnée.’²¹

I have now quoted textually all the references to the legendary pass down to the year 1787 that have yet been brought to light. Considered as evidence of the use of the Col du Géant before that date it must be conceded, I think, that they are singularly unsatisfactory. The alleged passages of the brother of one of M. de la Rochefoucauld-Enville’s guides about 1722, Ribel about 1740, and the witty Capuchin of Sallanches in 1772, are so obviously apocryphal that it is surprising, to say the least, to find them accepted as authentic by as critical an historian as Mr. Coolidge. As for the origin of the tradition, I venture to put forward what seems to me to be, at any rate, a plausible conjecture. The persistent belief in the former existence of a short and easy route between Chamonix and Courmayeur was clearly based upon the supposition that the glaciers had formed in comparatively recent times. The natives of the two villages, like those of most of the glacier districts in the Alps, were convinced that many valleys now

²⁰ See Dr. H. Dübi’s volume, *Paccard wider Balmat*, Berne, 1913, p. 260, in which the text of Dr. Paccard’s MS. Journal is printed in full for the first time. The valley of the Mer de Glace was called ‘ la vallée du Bayer ’ by the natives of Chamonix in the eighteenth century.

²¹ See *Excursion dans les Mines du Haut Faucigny, et Description de deux nouvelles routes pour aller sur le Buet et le Breven, avec une notice sur le Jardin*, by Berthoud van Berchem, Lausanne, 1787, pp. 44-45.

filled with ice were once rich meadows or covered with dense forests.²² The snowy depressions along the higher ridges of the chain were supposed to be, in reality, deep gorges which had been literally filled to the brim with ice and snow. And it was doubtless known by the middle of the seventeenth century that the actual distance between the two villages in a straight line was only six or seven leagues.²³ Hence the idea gradually arose in the minds of the natives that before the glaciers had accumulated it was possible to walk from one valley to the other with ease through passages which were then much lower. But, as a matter of fact, there seems to be no reason for assuming that the glaciers have undergone any great change within the last thousand or more years. They have undoubtedly advanced or receded a few hundreds or thousands of yards at times since the Chamonix Valley has been inhabited, but above the snow-line they must have offered very much the same obstacles to travellers in the Middle Ages as at the present day. The legend of the abandoned pass seems to me, therefore, to belong rather to the domain of Alpine folk-lore than to that of serious mountaineering history.

²² The following extract from Gruner's *Histoire Naturelle des Glacieres de Suisse*, 1770, pp. 329-330 (which first appeared in German in 1760), shows how common this belief was among the inhabitants of the Bernese Oberland in the eighteenth century :

'Les habitans de la vallée d'Hasli au Canton de Berne, se plaignent que les amas de glace ayant augmenté peu à peu se sont emparé des vallées entières, & ont couvert des terres fertiles. D'anciennes chartres prouvent en effet que la vallée des Fleurs-de-lis sur le Gault, s'étendoit autrefois par le Gletcherthal jusqu'au Grindelvald. Les Grindelvaldois se plaignent qu'un de leurs vallons, qu'est aujourd'hui rempli de glace, étoit accessible autrefois, & qu'on y passoit pour aller aux bains de Ficher en Vallis. Ceux de Lauterbrunner assurent que les côtes de leurs montagnes étoient revêtues jadis de beaux paturages ; qu'Ammerten étoit un gros bourg, & le val Rouge (Rothethal) un passage pour se rendre au Val FROUTIGNER & dans le Vallis ; mais qu'aujourd'hui tous ces lieux sont ensevelis sous les glaces. . . . Le Faucigny, le Vallis, l'Ourner, le Glarner retentissent de pareilles plaintes, & la plupart sont confirmées par des chartres authentiques.'

²³ On Jaillot's map of *Les Duchés de Savoye, de Genevois, de Chablais*, etc., which appeared about 1690, *Chamunis* and *Cormajor* are placed within seven leagues of each other, and the scale is given in 'lieues d'une heure de chemin.' A traveller unfamiliar with the district would naturally infer, therefore, that the journey between the two villages could be made on foot in seven hours.

II. THE COL DU GÉANT FROM 1786 TO 1800.

THIS period of the history of our pass has been dealt with so exhaustively by Mr. Freshfield in the fascinating chapter on the Col du Géant in his biography of Horace-Benedict de Saussure that I have little to add, save the original text of a number of hitherto unpublished documents bearing upon the subject.

In the preceding pages I have endeavoured to show that in all probability there was no basis of fact in the legend of the abandoned pass between Chamonix and Courmayeur. There can be little doubt, however, that the story led eventually to the opening of the Col du Géant; for at a time when strangers were beginning to take an active part in the exploration of the glaciers of the chain of Mont Blanc, it was only natural that an effort should be made sooner or later to rediscover a pass which was commonly believed to have afforded, within comparatively recent times, so short and convenient a route between Chamonix and Courmayeur. But notwithstanding the fact that the ridge had been attained from the S.E. in or some time before 1774, the exploration of the glaciers on the Chamonix side proceeded very slowly during the ensuing decade. I find no record of an attempt to reach the upper plateau of the Glacier du Tacul until June 1784, when Dr. Paccard, with the guide Pierre Balmat, advanced through deep snow nearly to the base of the Noire. It is evident, from the somewhat obscure account of this expedition in Paccard's MS. Journal, that his object in trying to force his way through the Séracs du Géant was to ascertain whether Mont Blanc could be attacked from that side with any chance of success, and he seems to have taken no interest in the search for the legendary pass.

In 1786 we hear at last of an attempt to cross from Chamonix to Courmayeur by the Glacier du Tacul. It was made by a young Vaudois named Charles-François Exchaquet,¹ who had

¹ There is a brief sketch of Exchaquet's life in Dr. Dübi's *Jakob Samuel Wytttenbach und seine Freunde*, Berne, 1910, pp. 75-77. He was born in the Canton de Vaud in 1746, the son of the pastor of Aubonne (near Nyon), and died about 1792. The *Journal de Lausanne* of September 1, 1787, contains a detailed account of his reliefs

settled in Servoz six years previously in the capacity of director of the mines near that village. His work evidently left him ample time for excursions in the neighbourhood, for he soon acquired a remarkably accurate knowledge of the topography of the chain of Mont Blanc. By 1786 he had finished a relief of the Chamonix Valley, of which reproductions were offered for sale to passing travellers the following season. Dr. J. E. Smith paid him a visit in 1787.

‘At Servos, a village at the entrance of the valley of Chamouni [he writes], I called on Mr. Exchaquet, superintendent of the neighbouring mines, in order to see his model of the Glaciers and Valley of Chamouni, and was extremely pleased to have such a comprehensive view in miniature of the noble scenes I was going to admire. This model is carved in wood and coloured; the ice being well imitated by broken glass. Its scale is a line to 18 toises, that is, 15,552 times less than the vast original.’²

It is singularly unfortunate that so few records of Exchaquet’s Alpine career have come down to us, for his unpublished

of the Chamonix Valley and Mont Blanc. The price asked for them was 30 louis. ‘Chaque relief,’ the writer says, ‘est accompagné d’une description indiquant les moyens dont on s’est servi pour lui donner toute l’exactitude possible, et les noms de tous les objets qu’il représente.’ Unluckily neither the models nor the accompanying description seem to have been preserved in any of the Swiss libraries.

Exchaquet also executed reliefs on a small scale of the district of Aigle and the St. Gotthard. The *Itinéraire du St. Gotthard, d’une partie du Vallais et des Contrées de la Suisse*, published by the celebrated Bâle engraver, Chrétien de Méchel, in 1795, contains a map entitled ‘Carte Pétrographique du St. Gotthard,’ by MM. Exchaquet, Struve, and I. P. Van Berchem. He also supplied the ‘Carte en Perspective de la Vallée de Chamouni et des Montagnes Avoisinantes dans le Haut Faucigni,’ in Berthoud Van Berchem’s *Itinéraire de la Vallée de Chamonix*, etc., Lausanne, 1790.

Long after Exchaquet’s death a pamphlet appeared in London entitled *A Short Account of Mont Blanc and the Valley of Chamouni, now exhibiting in Models, in Relief*, by J. B. Troye, 20 Frith Street, Soho, 1819 (pp. 12), in which he says the reliefs ‘are modelled after nature, by . . . J. B. Troye, who resided purposely on the spot, and who was Pupil to the celebrated Exchaquet, Draftsman to His Majesty the King of Sardinia.’

² *A Sketch of a Tour on the Continent in the Years 1786 and 1787*, London, 1793, vol. iii. p. 154.

letters to de Saussure, Gosse, and Wytttenbach show that he was undoubtedly one of the most experienced and competent mountaineers of the eighteenth century.

Early in September 1786—no less than ninety-seven years after Arnod's unsuccessful attempt to cross from Courmayeur to Chamonix by the 'glaciers of Mont-Fréty'—Exchaquet led the first attack on the Col du Géant from the Chamonix side. Accompanied by an Englishman named Hill³ and three guides, he bivouacked on the Couvercle, and the following day advanced as far as the Séracs du Géant. But Hill, who seems to have had little or no previous experience in glacier travel, retarded the progress of the party to such an extent that Exchaquet prudently decided to return to Chamonix rather than risk passing a night on the Glacier du Tacul.

Shortly afterwards Hill, with a friend and the guides Pierre Balmat and Marie Couttet, crossed the Col du Bonhomme and the Col de la Seigne to Courmayeur. From there they reached the Col du Géant under the leadership of a local hunter, who was very probably none other than Bourrit's guide Jordanay dit Patience, who, as we have seen, had already attained that point in or some time before 1774. In nearly all the books on early Alpine exploration it is stated that Hill descended from the col to Chamonix, and he is thus given the credit of having made the first passage. But, as a matter of fact, he returned to Courmayeur late the same evening, and at once wrote to Exchaquet to inform him of the success of his expedition.

³ Hill seems to have remained in Geneva several years, but despite a good deal of research in the Genevese archives I have never succeeded in ascertaining even his Christian name. In 1784 he was a witness of what was probably the first fatal accident to a tourist in the Chamonix Valley. With a young Genevese banker named Lecointe, he attempted to reach one of the lower summits of the Charmoz from the Montanvert. Hill stopped at the foot of the rocks, while his companion, notwithstanding the warning of his guide, continued the ascent alone. In attempting to cross some smooth slabs, Lecointe slipped and fell. His body was brought back to the Montanvert by Cachat le Géant. See Bourrit's *Description des Cols et Passages des Alpes*, 1803, vol. i. pp. 147-148. His death is recorded as follows in the register in Geneva: 'Lundi 2 août 1784 à 4 heures du soir, Ami Le Cointe, Citoyen, banquier, fils de feu Spectable Gédéon Le Cointe, Professeur et Pasteur de cette Eglise et de dame Galiffe, âgé de 28 ans, mort d'une chute à Chamouny en Savoie.'

The news that two Chamonix guides had reached the Col du Géant, apparently without difficulty, from the S.E. side, was encouraging enough, but it was not until early in the following season that Exchaquet returned to the attack. On arriving in Chamonix on June 27, 1787, he learned that Jean-Michel Cachat, who had agreed to accompany him, had left the same day with a comrade, ostensibly to look for crystals in the valley of the Mer de Glace. The next morning, at a quarter past two, he set out from the village with Marie Couttet and Jean-Michel Tournier, and arrived in Courmayeur at eight o'clock the same evening. At the inn there he was informed that Cachat and Alexis Tournier had made the same journey the day before, and had left the next morning for Chamonix by the Col de la Seigne and the Col du Bonhomme. These two expeditions were announced in the following article in the *Journal de Lausanne* of July 21, 1787, which is, I believe, the earliest printed account of the first passage of the Col du Géant.

‘ EXTRAIT D’UNE LETTRE DE CHAMONIX, DU
8 JUILLET 1787.

‘ Le 26 Juin, à dix heures du soir, Alexis Tournier et Jean-Michel Cachat des Plans, sont partis de Chamonix pour se rendre à Cormayor, en passant par la plaine du Tacul, et y sont arrivés le lendemain à six heures du soir.

‘ Le 28, M. Exchaquet, Directeur général des fonderies du haut Faucigny, étant parti de Chamonix à deux heures et un quart du matin, accompagné de deux guides, Marie Couttet et Jean-Michel Tournier, est arrivé à deux heures et demi au sommet du Tacul,⁴ s’y est arrêté pendant environ deux heures pour se reposer, et à huit heures du soir, est arrivé à Cormayor.

‘ Ce passage du Tacul étoit regardé comme impraticable, depuis que ce glacier a beaucoup augmenté : cependant M. Exchaquet ne l’a pas trouvé difficile, mais il faut avoir le beau tems pour faire cette route.—Le Tacul offre dans son point le plus élevé, une plaine de neige, admirable pour faire des observations.’

Soon after their return to Chamonix, Cachat and Tournier

⁴ The summit of the Col du Géant.

sent the following quaint narrative of their expedition to Bourrit :

‘ Relation du passage ouvert et pratiqué par JEAN MICHEL CACHAT et ALEXIS TOURNIER depuis la Vallée de glace du Montanvert en Chamonix, jusques en Piémont.

‘ Nous sommes partis du Village des Bois, notre habitation à Chamonix, à dix heures du soir le 26 juin, année courante 1787 ; dans l’obscurité de la même nuit nous avons passé le Muret, lieu connu par sa pérécitation, nous sommes parvenus la même nuit au lieu de l’Echelier, nous y avons couché sous une pierre pour quelques moments ; nous y fûmes bientôt saisis d’un froid excessif ; ce trajet nous a coûté 4 heures de marche ; notre retraite y fut de l’espace de deux heures ; la rigueur du froid nous excita à y faire du feu ; nous trouvant sans bois sec, nos efforts à cet égard furent inutiles ; à deux heures du matin 27 du dit juin ayant redoublé notre marche pour traverser la mer de glace, nous sommes arrivés à six heures du matin sous le pied de l’Aiguille noire ainsi appelée, là nous avons aperçu quelques rayons du soleil un instant seul et sans aucun effet, et suivant notre marche, nous sommes parvenus à la sommité de la montagne, soit au plateau de Mont-fruitier ; là nous avons fait nos observations pour découvrir le Piémont, soit Cormayeur, et remplir l’issue de notre voyage ; ayant tenté une descente rapide à l’opposite, nous y fûmes plongés dans les neiges jusques aux bras ; après divers efforts, arrivés dans notre descente auprès de quelques troupeaux de moutons, cette rencontre fut pour nous un objet de courage, nous en trouvâmes le berger dont le langage avec le nôtre fut sans aucune intelligence, ensuite d’une autre descente, ayant demandé par nos cris la route, les bergers saisis d’effroi prirent la fuite sans nous donner aucune réponse ; arrivés au village de Trèves qui est le premier lieu habité sous la montagne, les gens de l’endroit à notre aspect s’attroupèrent et furent frappés de surprise sur le récit du passage que nous venions de pratiquer et qui fut de tout temps inconnu et impraticable ; la surprise ne fut pas moindre pour les gens du bourg de Cormayeur lorsque nous y arrivâmes, leur langage sur l’issue, et l’entreprise de notre voyage fut de longue durée et avec d’autant plus d’étonnement que ni leurs gens, suivant ce qu’il nous fut dit, ni ceux de Chamonix n’avaient jamais réussi au même projet malgré toutes tentatives qui en avaient été ci-devant faites, et c’est à la faveur de notre succès dans cette découverte que le conseil soit Syndic du dit lieu de

Cormayeur nous a accordé un certificat sur l'objet de notre réussite ci-dessus motivée.'⁵

Two months afterwards, Bourrit succeeded in making his celebrated passage of the Col du Géant. His party consisted of the *Historiographe des Alpes* himself, his son Charles (aged 14), and the guides Jean-Michel Cachat, Alexis Tournier, Jean-Baptiste Lombard, and Charlet dit Mercure. After a night on the Montanvert, the party set out at four in the morning of August 28, 1787, carrying with them a ladder 12½ ft. long. They experienced considerable difficulty in passing the Séracs du Géant, and during the last hour and a half of the ascent they were enveloped in thick clouds. By three in the afternoon they began to fear they had crossed the pass, and were about to retrace their steps when the clouds suddenly lifted and they saw rocks nearby, and the village of Courmayeur at their feet. From the pass they took five hours and a half to descend to Courmayeur, arriving at half-past nine in the evening.

In the narrative of this expedition which Bourrit hastened to publish in the *Journal de Genève* of September 15, 1787, he neglected to mention the passage effected by Exchaquet earlier in the same season.⁶ It was undoubtedly for this reason that Henri-Albert Gosse, who had seen the manuscript of Bourrit's narrative, published in the same issue of that journal a letter in which he called attention not only to Exchaquet's passage, but to a previous passage which he understood had been made by Hill in 1786.

'Dans le courant du mois de juin dernier [wrote Gosse], M. Exchaquet me fit part de ses tentatives pour franchir le passage de Chamouni à Cormayeur par le glacier du Tacul, et du succès de ce voyage fait en 1786 par un Anglois nommé M. Hill, qui étoit parti de Cormayeur avec Marie Couttet, et arrivé à Chamouni par les glaciers du Tacul et des bois. Cet

⁵ I am deeply indebted to the courtesy of M. Albert Bourrit, a great-great-grandson of the *Historiographe des Alpes*, for this interesting document.

⁶ Bourrit also published detailed accounts of his passage of the Col du Géant in his *Lettre à Miss Craven*, 1787 (of which Mr. Freshfield has given us an admirable translation in his *Life of H. B. de Saussure*, pp. 246-250); the *Itinéraire de Genève et Chamouni*, 1792, pp. 259-269; the *Description des Cols et Passages des Alpes*, 1803, vol. i. pp. 113-119; and the *Itinéraire de Genève, des Glaciers de Chamouni*, etc., 1808, pp. 69-97.

Anglois assuroit (ce que M. Exchaquet m'a confirmé depuis) qu'il n'existoit dans cette traversée qu'un passage vraiment difficile pour toutes personnes peu accoutumées à parcourir les vallées de glaces ; c'étoit la descente du Tacul.'

Bourrit promptly replied to these assertions in a supplement to his narrative, which appeared in the same journal a week later.

' Parvenus sur le détroit du Mont-Fruitier [he wrote], ils se rappelèrent que ce fut-là le *non plus ultra* de M. Hill, anglois, qui, l'année auparavant, y étoit arrivé par Cormayeur avec les Guides Pierre Balmat et Marie Couttet. La rapidité des plateaux supérieurs au glacier du Tacul, les énormes crevasses qu'il auroit eu à traverser pour descendre du côté de Chamouni l'arrêtèrent : nos voyageurs craignirent qu'il ne leur en arrivât autant, vu les circonstances fâcheuses qui les accompagnoient.'

At the same time he addressed an indignant letter to Gosse demanding a retraction of the statement relative to Hill. Gosse answered as follows :

' HENRI-ALBERT GOSSE

' à MARC-THÉODORE BOURRIT.

' Genève ce 24 Septembre 1787.

' Monsieur,

' La lettre que vous m'avez fait l'honneur de m'écrire en date du 22 de ce mois m'a un peu surpris, puisque vous m'y demandez une rétractation que je ne vous dois point. J'ai fait insérer dans le Journal de Genève no. 7 quelques détails sur le passage de Chamonix à Cormayeur, mais je n'y ai mis d'autre importance que celle de mettre sous les yeux du public quelques faits omis dans le Journal de Lausanne no. 34. J'aurais sûrement retiré ma lettre de MM. les Rédacteurs, si dans une relation manuscrite de votre voyage dans les mêmes lieux (et que j'ai vue ensuite imprimée avec des changements et retranchements importants) vous eussiez parlé de tous ceux, soit Chamoniards ou étrangers qui vous y ont précédés et que vous n'y eussiez pas cherché à affaiblir l'idée qu'on a conçue de l'intrépidité de ceux qui sont parvenus sur la cime du Mont-Blanc.

' Si dans ma lettre j'ai mal informé le public (que l'on doit toujours respecter) ce n'est qu'à lui seul à qui je dois une rétractation. Restez donc tranquille, Monsieur, sur cet objet et persuadez-vous que je suis si éloigné de diminuer une gloire que vous méritez, que je voudrais au contraire voir vos talents

et votre courage appréciés par chacun comme je les apprécie moi-même, en me disant avec le sentiment d'une estime distinguée,

' Monsieur,

' Votre très humble et très obéissant serviteur,

' HENRI-ALBERT GOSSE.'

To this letter Bourrit replied the same day :

' MARC-THÉODORE BOURRIT

' à HENRI-ALBERT GOSSE.

' Genève ce 24 Septembre 1787.

' Monsieur,

' Je vois par la lettre dont vous venez de m'honorer que je n'ai pas eu le bonheur d'être compris de vous. La rétractation dont je parlais ne consiste que dans des faits que j'ai crus glissés par erreur seulement et celui qui concerne Mr Hill en est une : Ne vous ayant point supposé de motifs contre moi, je ne pouvais pas demander de réparation personnelle, je n'ai donc prétendu dire autre chose sinon, que les erreurs vous étant connues j'espérais que vous daigneriez les redresser.

' Vous me supposez l'intention d'avoir cherché à affaiblir l'idée qu'on a conçue de l'intrépidité de ceux qui sont parvenus sur le Mont-Blanc, lisez-moi mieux Monsieur, et vous verrez que je n'ai point eu ce motif. Dire avec mes guides que les horreurs du Tacul surpassaient celles qu'ils virent sur le Mont-Blanc n'est pas attaquer l'intrépidité de ceux qui y sont parvenus, c'est dire si vous le voulez que l'on n'a pas été moins intrépide, c'était peindre les grands changements que les chaleurs produisent sur les glaciers.

' Vous dites que je n'ai pas nommé tous ceux qui m'ont précédés dans ce voyage : cependant j'ai nommé les deux guides qui l'ont fait les premiers, et pour avoir omis Mr Exchaquet, il n'en résulte pas que j'aie été injuste à son égard, n'ayant point fait le premier cette découverte j'aurais pu le nommer ou l'omettre indifféremment.— Quant à Mr Hill voyez, Monsieur, la relation que je publiai l'année dernière de la découverte du Mont-Blanc, j'y annonce sa course de Cormayeur au Tacul comme une découverte intéressante.

' Vous dites encore que vous avez publié votre extrait par la raison aussi des changements et des retranchements que vous avez remarqués entre la relation manuscrite de mon voyage et celle imprimée ; mais votre remarque ne prouve autre chose sinon, qu'ayant aperçu que l'on pouvait interpréter d'une certaine manière mon imprimé j'ai cru devoir parer

à cela en changeant quelque chose pour le Journal, car je puis prouver que l'imprimé est antérieur au manuscrit que vous avez vu.

' Je ne discuterai pas les titres qui vous érigent en juge dans cette affaire, chacun est maître de sa plume et vos talents vous en donnent sans doute. Je vous prie seulement de considérer que j'ai écrit l'histoire de ce pays il y a 15 à 18 ans, que j'ai contribué en quelque chose à sa célébrité, que mes courses ont été souvent des découvertes et qu'à ces titres je puis mériter, non que l'on me passe des erreurs, mais d'être traité avec plus d'équité dans mes intentions, j'ai pu l'espérer de vous, Monsieur, par l'opinion que j'ai toujours eue de votre caractère moral et je l'espère encore.

' C'est dans ces sentiments et ceux de la considération la plus distinguée que j'ai l'honneur d'être,

' Monsieur,

' Votre très humble et très obéissant serviteur,

' BOURRIT.'

Upon receipt of this letter Gosse appealed to Exchaquet for information. The latter sent in reply the following interesting letter, which contains all that I have succeeded in unearthing relative to Hill's alleged passage of the Col du Géant :

' C. EXCHAQUET à HENRI-ALBERT GOSSE.

' Servoz le 29 Septembre 1787.

' Monsieur,

' Suivant votre désir j'ai le plaisir de vous donner un détail exact du voyage de Mr Hill au Tacul, et du mien à Cormayeur en passant par le Tacul, de même que celui de Cachat qui m'a précédé d'un jour.

' Depuis plusieurs années j'avais le dessein de tâcher de me rendre à Cormayeur par le Tacul croyant que le passage n'était pas difficile. Des occupations m'ont empêché de l'essayer jusqu'à l'année dernière; au commencement de Septembre je formai le projet de l'exécuter avec Mr Hill. Nous partîmes de Chamonix accompagnés de trois guides, le jour de notre départ nous couchâmes au Couvercle, le lendemain matin nous nous mîmes en route, arrivés à la chute du glacier du Tacul nous rencontrâmes des fentes larges sur le glacier et assez difficiles à traverser. Mr Hill n'étant pas beaucoup habitué à voyager sur les glaciers retardait beaucoup notre marche, de sorte que voyant que nous n'avions fait que très peu de chemin pendant l'espace d'environ deux heures et jugeant que nous employerions encore plusieurs heures

pour traverser les mauvais endroits du glacier, nous prîmes le parti de rebrousser plutôt que de nous exposer à passer la nuit sur les neiges du Tacul.

‘ Mr Hill qui devait se rendre avec un ami à Cormayeur depuis Chamonix en passant par le Bonhomme, ne perdit point de vue le projet d’essayer de monter depuis Cormayeur au sommet du Tacul, surtout dans le dessein d’examiner s’il trouverait depuis là un passage pour parvenir au sommet du Mont-Blanc. Etant à Cormayeur il partit un matin accompagné de son ami, de Marie Couttet de Chamonix et d’un chasseur de l’endroit ; ils arrivèrent tous les quatre [dans] l’après midi au sommet du Tacul et retournèrent le même jour à Cormayeur sans descendre à Chamonix. A son retour il m’écrivit une lettre datée de Cormayeur qui me fut remise par Marie Couttet : voici en peu de mots ce qu’il me marque de son voyage : — “ Je suis arrivé avec mes compagnons de voyage que je vous ai nommés, fort aisément au sommet du Tacul ; nous l’avons redescendu de même, et sommes arrivés tard dans la nuit à Cormayeur parce que nous étions partis tard et que nous nous sommes beaucoup arrêtés au Tacul. J’ai remarqué comme vous me l’aviez déjà dit qu’il est impossible de parvenir de ce côté au Mont-Blanc.”

‘ Marie Couttet m’a aussi fait le même détail de ce voyage, de sorte que vous avez été mal informé du voyage de Mr Hill.

‘ Environ le 24^e Juin dernier, je dis à Marie Couttet et à Jean-Michel Cachat que j’étais toujours dans le dessein d’essayer de me rendre à Cormayeur par le Tacul, que je ne tarderais pas de l’entreprendre si le temps était favorable. Ils me répondirent tous les deux qu’ils m’accompagneraient volontiers. Jean-Michel Cachat me dit qu’il se proposait d’aller un de ces jours à la découverte du chemin et qu’il me donnerait de ses nouvelles à son retour. Le 27^e Juin voyant que le temps était au beau je me rendis ce jour-là à Chamonix où j’appris que Cachat était parti le soir d’avant avec un camarade pour aller dans la vallée de glace pour y chercher des cristaux ; comme je voulais profiter du beau temps, je remplaçai Cachat par Jean-Michel Tournier, le lendemain à 2½ d’heures du matin nous partîmes tous trois de Chamonix et arrivâmes à Cormayeur à 8 heures du soir. Il faisait un très beau temps et nous n’avons pas rencontré de difficultés dans cette traversée. Nous apprîmes à l’auberge que Cachat accompagné d’Alexis Tournier y étaient arrivés le soir d’avant nous et qu’ils étaient repartis le lendemain matin pour traverser l’Allée Blanche. Nous n’avons trouvé les pas sur la neige de ceux qui nous ont précédés qu’au

sommet du Tacul parce qu'ils n'ont pas monté le glacier du même côté que nous. Je crois, Monsieur, vous avoir donné là-dessus tous les détails que vous me demandez. Le but de mon voyage à Cormayeur était de simple curiosité; je cherchais à m'y rendre par le plus court passage, et j'avais en même temps le désir de prendre une connaissance plus exacte que je ne l'avais de la vallée de glace du Tacul relativement à mes reliefs, de même qu'aussi de faire à une grande élévation une expérience dans mon appareil à l'esprit de vin.

' Je désirerais beaucoup d'avoir quelque chose de plus intéressant à vous communiquer. Veuillez je vous prie disposer de moi si je peux vous être de quelque utilité.

' Recevez l'assurance des sentiments distingués avec lesquels je suis,

' Monsieur,

' Votre très humble et très obéissant serviteur.

' C. EXCHAQUET.'

Finding that he had unintentionally misinformed the public, Gosse at once endeavoured to correct his mistake with regard to Hill by addressing the following letter and memoir to the editors of the *Journal de Genève* :

' HENRI-ALBERT GOSSE

' aux Rédacteurs du Journal de Genève.

' Genève le 8 Octobre 1787.

' Messieurs,

' Dans la lettre que j'ai eu l'honneur de vous adresser le 24 Août dernier, et que vous avez insérée dans votre Journal N° 7, j'ai fait une erreur de mémoire. Comme Mr Bourrit ne l'a relevée qu'en partie dans le N° 8, je vous prie de publier le précis historique suivant du renouvellement du passage de Chamonix à Cormayeur par les Glaciers des bois et du Tacul. Je l'extraits en grande partie d'une lettre de Mr Exchaquet datée de Servoz le 29 Septembre 1787.

' J'ai l'honneur d'être très parfaitement,

' Messieurs,

' Votre très humble et très obéissant serviteur,

' HENRI-ALBERT GOSSE.

' Précis Historique sur le passage de la Vallée de Chamonix à Cormayeur nouvellemente retrouvé, par les glaciers des bois et du Tacul.

' Depuis plusieurs années Mr Exchaquet avait dessein de se rendre de la vallée de Chamonix à Cormayeur par les glaciers

des bois et du Tacul, se persuadant que le passage n'en était pas difficile ; ce ne fut qu'au commencement du mois de Septembre 1786 qu'il essaya de l'exécuter avec Mr Hill, Anglais. Ils partirent du Prieuré de Chamonix accompagnés de trois guides et furent coucher au Couvercle, le lendemain matin ils arrivèrent à la chute du glacier du Tacul ; ils rencontrèrent sur le glacier des fentes larges et assez difficiles à traverser sans échelles et sans cordes. Cependant malgré ces obstacles provenant de la saison avancée, Mr Exchaquet et les guides seraient inmanquablement parvenus à leur but, si Mr Hill, peu accoutumé à parcourir les glaciers, n'avait beaucoup retardé leur marche ; craignant donc d'être exposés à passer la nuit sur les neiges du Tacul, ils prirent le parti de revenir coucher au Prieuré de Chamonix.

Mr Hill, qui devait se rendre avec un ami depuis la vallée de Chamonix à Cormayeur, en passant par le Bon homme et l'Allée blanche, ne perdit point de vue le projet d'essayer de monter depuis Cormayeur au sommet du glacier du Tacul, dans le dessein surtout d'examiner s'il trouverait depuis là un passage pour parvenir au sommet du Mont-Blanc. Etant à Cormayeur, il partit un matin (du même mois de Septembre) accompagné de son ami, de Marie Couttet et d'un chasseur de l'endroit, que Mr Bourrit dit être Pierre Balmat ; ils arrivèrent fort aisément tous les quatre après midi au sommet du Glacier du Tacul et trouvèrent une impossibilité de parvenir sur la cime du Mont-Blanc par le côté, mais ils ne descendirent pas à la vallée de Chamonix par les glaciers du Tacul et des bois (comme je le croyais). Il paraît même qu'ils n'en eurent pas le projet, ils ne furent donc pas arrêtés dans leur course (comme Monsieur Bourrit le dit) par la rapidité du plateau supérieur et par les énormes crevasses de ce glacier. Mr Bourrit croyait le contraire, lorsqu'il disait dans sa lettre imprimée datée de Genève du 20 Septembre 1786 : " Tandis que l'on atteignait le Mont-Blanc, le guide Marie Couttet conduisait Mr Hill, anglais, au sommet du Tacul par le côté de Cormayeur, ils atteignirent l'aiguille du Géant et si le jour eut été plus long, ils se seraient ouvert un chemin pour arriver de la Val d'Aost à Chamonix, par la mer de Glace, route qui est fermée depuis un siècle." S'étant beaucoup arrêtés sur le haut de la vallée de glace du Tacul, ils en partirent tard, et descendirent fort aisément à Cormayeur, où ils n'arrivèrent que bien avant dans la nuit.

Environ le 24 Juin dernier, Mr Exchaquet dit à Marie Couttet et à Jean-Michel Cachat qu'il était toujours dans

le dessein d'essayer de se rendre de la vallée de Chamonix à Cormayeur par les glaciers des bois et du Tacul, et qu'il ne tarderait pas d'en entreprendre le voyage si le temps était favorable. Ces deux guides témoignèrent le désir de l'accompagner. Jean-Michel Cachat dit alors à Mr Exchaquet qu'il se proposait d'aller à la découverte du chemin pour lui en donner des nouvelles à son retour.

' Le 27 Juin, Mr Exchaquet, voyant que le temps était beau, se rendit au Prieuré de Chamonix ; il y apprit que Jean-Michel Cachat était parti le 26 au soir avec un camarade (Alexis Tournier) pour aller, disait-on, chercher des cristaux. Comme Mr Exchaquet voulait profiter du beau temps il remplaça Cachat (qui devait être un de ses guides) par Jean-Michel Tournier : Le lendemain 28 Juin à 2 heures et $\frac{1}{4}$ du matin Mr Exchaquet et ses deux guides Marie Couttet et Jean-Michel Tournier partirent du Prieuré de Chamonix. Ils parvinrent par un très beau temps à 2 heures et demie sur le haut de la vallée de glace du Tacul ; ils s'y arrêtrèrent pendant deux heures, Mr Exchaquet y fit diverses expériences et observations intéressantes, il y remarqua entr'autres un plateau, qui lui parut d'un accès peu difficile, à environ 200 toises plus haut que le lieu où il était, c'est à dire d'environ 2000 toises au dessus du niveau du lac de Genève ; l'on peut juger de l'avantage que pourra retirer un habile observateur d'une semblable position, où il peut espérer de parvenir, au moins trois mois dans l'année, sans avoir à éprouver la plupart des difficultés qu'ont eu à surmonter ceux qui ont atteint la cime du Mont-Blanc. Nos voyageurs satisfaits de leur séjour dans ce lieu intéressant, se mirent en marche pour Cormayeur et y arrivèrent le même soir à 8 heures sans avoir rencontré de difficultés dans leur traversée. Ils apprirent que Jean-Michel Cachat et Alexis Tournier étaient arrivés à Cormayeur le soir précédent à 6 heures et qu'ils en étaient partis le 28 au matin pour traverser l'Allée Blanche. Les deux agiles, courageux et intrépides Chamoniards, les premiers hommes qui depuis peut-être 50 ans, ont fait cette traversée de la vallée de Chamonix à Cormayeur, ne montèrent pas le glacier du Tacul par le même côté que Mr Exchaquet et ses guides, l'empreinte de leurs pieds sur la neige ne fut trouvée qu'au sommet de la vallée du Tacul.

' Le but de Mr Exchaquet dans son voyage de la vallée de Chamonix à Cormayeur était soit de chercher un passage court qui pût devenir avantageux pour ces contrées, soit de prendre une connaissance plus exacte de la vallée de glace du

Tacul, afin de perfectionner ses superbes reliefs, soit enfin de faire des expériences sur la combustion.

' Le 27 Août dernier Mr Bourrit, accompagné de Mr son fils, âgé de 14 ans, et deux guides Jean-Michel Cachat et Alexis Tournier entreprirent le même voyage de la vallée de Chamonix à Cormayeur, où ils arrivèrent heureusement par un beau clair de lune à 9 heures et demie du même soir après avoir donné des preuves de leur courage et de leur intrépidité.⁷

' Les changements qu'éprouvent les glaciers par les chaleurs de l'été pouvaient bien avoir rendu le passage du glacier du Tacul difficile et avoir occasionné les fatigues et les dangers auxquels ont paru être exposés les derniers voyageurs. Les brouillards toujours si redoutables⁸ dans les voyages sur les glaciers et trois pouces de nouvelle neige pouvaient aussi avoir écarté les guides de la route qu'ils avaient suivie auparavant, différente même de celle où Mr Exchaquet et ses guides n'avaient éprouvé de difficultés.

' Le passage de la vallée de Chamonix à Cormayeur, qui ne pouvait se faire depuis environ 50 ans que par des routes détournées en employant le moins deux journées et demie, me paraît présenter des avantages pour quelques habitants de la vallée de Chamonix, de Cormayeur et de la Val d'Aost, ou pour quelques curieux et hardis observateurs habitués à parcourir les glaciers : je ne crois pas qu'on en puisse jamais faire une route pour le commerce telle que celles de plusieurs glaciers qui séparent le haut Valais du Piémont et qu'on peut traverser avec des mulets dans les mois de Juillet, d'Août et de Septembre. Si l'on a pu parvenir de Cormayeur à Turin, ce n'a dû être qu'en traversant avec beaucoup de peine plusieurs montagnes et en échappant à une infinité de dangers.

' H. A. GOSSE.'⁹

This memoir, however, was unfortunately never published, and consequently Gosse's mistake in asserting that Hill had crossed the Col du Géant from Courmayeur to Chamonix has found its way into most of the standard works on early Alpine

⁷ Voyez pour une plus ample description de cet étonnant voyage les Journaux de Genève No. 7 et 8. [Note by Gosse.]

⁸ Dans la supposition qu'ils sont abondants et denses. [Note by Gosse.]

⁹ For these letters as well as the memoir I am indebted to Mlle. Danielle Plan, the author of the biography of H. A. Gosse. I have also to thank Dr. H. Maillart-Gosse for very kindly allowing me to publish them.

exploration. M. Durier, who discovered Gosse's letter in the *Journal de Genève* of September 15, 1787, and reprinted it textually in the *ALPINE JOURNAL* (ix. pp. 86-89), quotes Bourrit's statement that the 'détroit du Mont-Fruitier,' or, in other words, the summit of the col, was Hill's turning point, and that he did not descend to Chamonix.

'Ce commentaire [he writes] qui enlèverait à Hill le mérite d'être le premier touriste qui ait franchi le Col du Géant, a évidemment été inséré dans le but de réfuter la lettre de Gosse. Quelle foi faut-il y ajouter ? Pour ma part, je n'y vois qu'un exemple de la tendance des guides à nier la réalité des ascensions dont ils n'ont pas eu l'honneur, et, en particulier, un effet de l'incurable jalousie de Cachat-le-Géant.'

But M. Durier overlooked the fact that Bourrit had already mentioned Hill's expedition more than a year before in his letter on the first ascent of Mont Blanc,¹⁰ in which we read :

'Cette saison est marquée par de nouvelles découvertes. Tandis que l'on atteignoit le Mont-Blanc, le Guide Marie Coutet conduisoit M. Ille, anglois, au sommet du Tacul, par le côté de Courmayeur ; ils atteignirent l'éguille du Géant, et si le jour eût été plus long, ils se seroient ouverts un chemin pour arriver de la Val-d'Aost à Chamouni, par la mer de glace ; route qui est fermée depuis un siècle.'

Mr. Coolidge also accepted Hill's reputed passage of the Col du Géant as authentic until the above documents convinced him of his mistake. In the *Jahrbuch* of the S.A.C., 1901, pp. 273-274, he writes :

'Or, Marie Coutet fut le guide de Hill, d'Exchaquet et de Bourrit, lors de leurs courses vers ce col ; mais il semble avoir raconté des histoires différentes relatives à la course de M. Hill, à Exchaquet (qui y croit), et à Bourrit (qui la nie). Bourrit lui-même dans ses récits de son passage ne souffle jamais le nom de Hill.'

The distinguished and painstaking author of 'The Alps in Nature and History' is not, in this instance, accurate. In the first place Marie Couttet did not accompany Bourrit over the Col du Géant, for that author's *Description des Cols et*

¹⁰ 'Lettre de M. Bourrit sur le premier voyage fait au sommet du Mont-Blanc, le 8 Août dernier,' p. 10. This pamphlet is reproduced in facsimile in Dr. Dübi's *Paccard wider Balmat*.

Passages des Alpes, 1803, vol. i. p. 80, reads: '... enfin le grand Jorasse, Charlet-Mercure et Tournier-l'Oiseau, qui firent avec moi la traversée de la mer de glace du Montanvert en Piémont'; and in the narrative in his *Itinéraire de Genève, Lausanne et Chamouni*, 1791, p. 260, he says he was accompanied by Jean-Michel Cachat and three other guides. Thus it is obvious that Marie Couttet was not one of Bourrit's four guides. Secondly, as I have already shown, Exchaquet certainly did not believe that Hill descended to Chamonix from the Col du Géant. And thirdly, Bourrit did mention Hill's name in his narrative, and, strange as it may seem, Mr. Coolidge himself quotes the reference to him.

De Saussure's memorable passage of the Col du Géant has been dealt with so fully in Mr. Freshfield's life of that illustrious savant that it may be dismissed in a few lines here. His party, consisting of de Saussure himself, his son Nicolas-Théodore, and a small army of guides, left Chamonix on July 2, 1788, and passed the night in their tents at the foot of the Aiguille du Tacul. The next day they ascended to the pass, where several guides who had preceded them had already built a small hut. Two days later Exchaquet arrived from Chamonix with four guides, and after a night on the pass continued his journey to Courmayeur, thus making the fourth passage of the Col du Géant. On July 19, after a sojourn of seventeen days at an altitude of 11,058 ft., during which de Saussure and his son carried out an elaborate series of scientific observations, the two travellers descended to Courmayeur with four guides, and returned to Chamonix by the Great St. Bernard. De Saussure estimated the altitude of the col to be 1763 toises¹¹ above the Mediterranean, or 3436 mètres, which is about 65 mètres higher than the figure given in the last edition of the *Carte Barbey* of the Chain of Mont Blanc (3371 m.).¹²

The only other passage recorded down to the close of the eighteenth century is that of the Vicomte de Serrant in 1790. In a letter printed by Bourrit in his *Itinéraire de Genève, Lausanne et Chamouni*, 1791, pp. 270-275, M. de Serrant says he was accompanied by Jean-Michel Cachat, Marie Couttet,

¹¹ The French toise was 1·949 mètres.

¹² De Saussure's first account of this expedition appeared in the *Journa' de Genève* of August 16, November 1 and 22, 1788. In the issue of August 16 the name 'Col du Géant' appears for the first time in print.

and four other guides. The two former were entrusted with the care of his person, and he says they saved his life every ten steps. He arrived at Courmayeur nearly blinded by the reflection of the sunlight on the snow, and after suffering considerably from the effects of the rarefied air.

Thus by the end of the century six passages of the Col du Géant had been effected :

1. Jean-Michel Cachat ('Cachat le Géant') and Alexis Tournier ('Tournier l'Oiseau') on June 27, 1787.
2. Charles-François Exchaquet, with Marie Couttet and Jean-Michel Tournier, on June 28, 1787.
3. Marc-Théodore Bourrit and his son Charles, with Jean-Michel Cachat, Jean-Baptiste Lombard ('le grand Jorasse'), Charlot Charlet (dit 'Mercure'), and Alexis Tournier, on August 28, 1787.
4. Charles-François Exchaquet, with four guides, on July 4-5, 1788.
5. Horace-Bénédict de Saussure and his son Nicolas-Théodore, with four guides, on July 2-19, 1788.
6. The Vicomte de Serrant, with Jean-Michel Cachat, Marie Couttet, and two other guides, in 1790.

THE NORTH-EAST FACE OF FINSTERAARHORN.

By VAL. A. FYNN.

ON my return from Alaska, I find the May ALPINE JOURNAL with Mr. Hasler's interesting paper on the N.E. face of the Finsteraarhorn. He refers to the Bruederlin-Fynn route, but I am unable to agree with all his conclusions.

The broken ridge or rib which descends from the southerly summit of the Finsteraarhorn to the Ober-Studerjoch and continues down to the Finsteraarhorn Glacier is, to my mind, very real indeed. There is nothing 'mythical' about it. The southern summit lies a few metres S.E. of the highest point. The rib first runs E. of S.E., but quickly curves to the E. and continues N. of E. It is unmistakable on the Wehrli and Montandon photographs illustrating Mr. Hasler's paper, but is best seen on the Donkin photograph accompanying this note. So massive is this ridge that it even boasts of a well-marked depression, indicated by a small

black circle on Donkin's photograph, which apparently divides it into two partly overlapping ridges. At about the height of the Hugi Sattel is a huge steep step which forms the head of the depression. The ridge divides at this point. The better marked leg is very smooth and steep, and forms the southern wall of the depression—the other is more broken, and while somewhat faint at first, it very soon becomes marked and forms the northern boundary of the depression. The two legs meet just above the Ober-Studerjoch, and the ridge continues down to the Finsteraarhorn Glacier. That part of it which forms the 'screen' protecting the lower part of the B.-F. route lies between the two white crosses seen on Donkin's photograph. The couloir S. of this rib, which runs almost parallel with the ice wall with which the Ober-Studerjoch is crowned, is well seen on the photograph facing page 272. Falling ice and stones are trapped in this couloir. In the main this ridge runs E. It is at least as prominent as the Bell-Fuhrer rib, which Mr. Hasler followed almost throughout in his ascent. The great couloir which is such a very prominent feature of the N.E. face would be non-existent but for this eastern ridge. This couloir is bounded by the two ribs in question. The eastern ridge forms its southern, Miss Bell's its northern, boundary. Whether this E. ridge can be climbed I am unable to say. The one doubtful stretch is that which lies immediately below the level of the Hugi Sattel.

As to Captain Farrar's remarks about 'a hopeless rock face ' (A.J. xxvii. 282) to which Mr. Hasler refers, these clearly apply to and correctly describe the N. end of the E. flank of the S.E. or Meyer ridge. This part of the mountain lies immediately S. of the eastern ridge under reference.

The main difference between the Hasler-Amatter and our routes occurs on the lowest part of the face, but they practically coincide from the horizon of the Ober-Studerjoch to just beyond the grey towers, and do not, I think, differ materially beyond that point, for both parties report having reached the S. summit *first*, and *from the left*, a very few minutes after overcoming the last difficulties. If there is a difference on this stretch, then our route probably lies a little to the S. of Mr. Hasler's.

Mr. Hasler's party was very lucky indeed, in that it neither saw nor heard any stones. The first time Bruederlin and I tried this face we attacked it at the very point at which Mr. Hasler began his climb, and were driven back by showers

of stones. The slabs S. of the grey towers and over which Mr. Hasler climbed show unmistakable signs of being frequently hit by stones. It is quite evident that conditions were more favourable in July 1904 than in August 1906, yet we were never once in danger from above on the lower part of our climb, and this part of our route appears to be safer than the corresponding section of the H.-A. line. It may be that our line above the grey towers was not as fortunate, but I do not think that there can be a material difference.

Notwithstanding the unfavourable condition of the face at the time of our climb, we had no difficulty at all in crossing the big couloir at about the horizon of the Ober-Studerjoch. The going is so very easy that one can run across if necessary, and one has not far to go.

We could have avoided many of the more difficult passages below the grey towers had we been more lucky as to falling stones, for there is quite a choice of routes in a number of places.

We found a piton and a lady's glove at point 2, but none of the ropes or rope rings left by Miss Bell's party.

Were I to try this face again I would leave the Pavillon Dollfus at about 9 P.M. and go right through. This N.E. face is one of the finest expeditions in the Alps. The immediate surroundings are simply stupendous, but detail views of the route itself demand a stereoscopic camera.

A complete account of the B.-F. route will be found in 'Alpinismus und Wintersport' for 1906. A very free translation of the main parts of this follows.

I never think of this face without recalling the splendid attempt—only defeated by weather conditions—of Miss Gertrude Lowthian Bell and her guides, Ulrich and Heinrich Fuhrer. This *tour de force* cannot fail to be of general interest, and I venture to add the topographical details of letters (translated) from Ulrich Fuhrer, Miss Bell's leader, to myself.

The Bruederlin-Fynn Route.

My first attempt was made a few days after Mr. Hasler's success, but when close to the bergschrund my companion decided that the undertaking was beyond his powers. A second attempt in 1906 was frustrated at the bergschrund because of sustained stone falls. On this occasion we were trying to reach the rocks at the point indicated by Mr. Hasler on page 272.

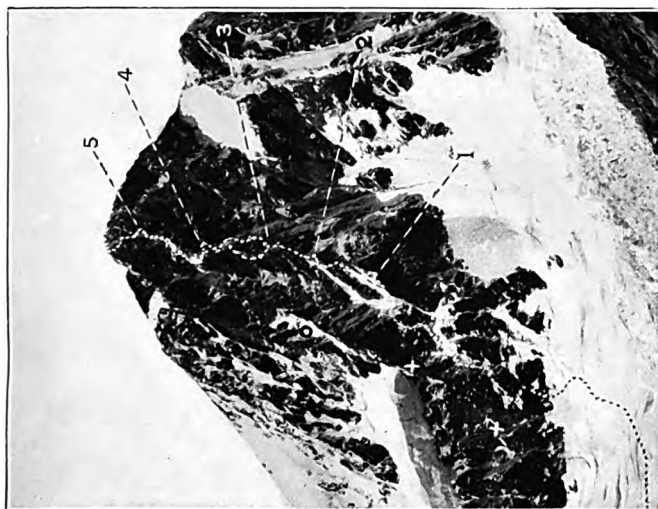
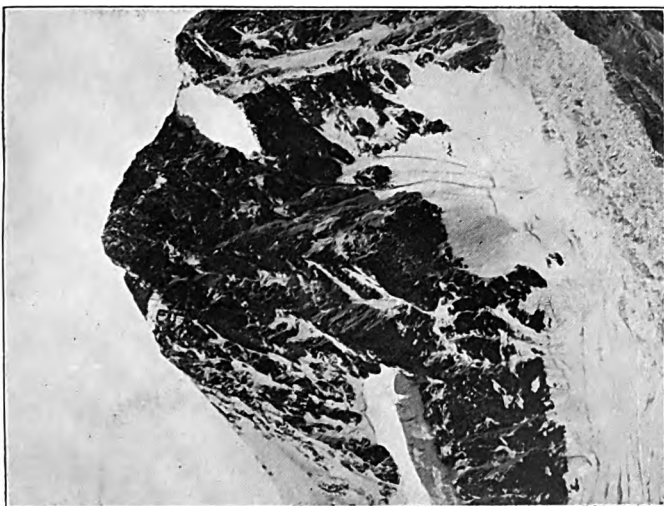
Success crowned an attempt made on August 12, 1906. Leaving the Dollfus at 1.05 p.m., prepared for a bivouac, we soon reached the Finsteraar Glacier, whence we could see the N.E. face in detail. We knew nothing of our predecessors' line.

The impression created by this face varies considerably, according to the point of view. Seen from the Finsteraar Glacier one would declare it impossible; while looking at it from the bergschrund and catching a glimpse of the summit ridge, apparently close at hand, one might easily believe it to be actually easy. The most correct impression is probably gained from the Studer or Oberaarhorn. The Siegfried map gives, on the whole, a fairly correct representation. Its height is about 1000 metres, and the average inclination about 50°. The first 300 metres are probably less inclined, while the last 200 or 300 metres average at least 65°.

A nearly continuous, in parts well defined, N. rib (N. with reference to its location on the N.E. face), descends in a N.E. direction from the main summit to the Finsteraarfirn, ending close to c.3300 of the Siegfried map. This rib shows a very steep step at the horizon of the Ober-Studerjoch; at about 3900 metres it borders on well-defined grey slabs and loses itself in the face close below the summit.

A southerly (southerly with reference to its location on the N.E. face) rib, also referred to as the E. ridge of the peak, leaves the end of the summit ridge a few metres S.E. of the main peak. This southerly rib is sharply defined in its upper portion and runs E. and then N. of E., being in the main almost parallel to the N. rib previously referred to. The Studerfirn reaches high up on the S. side of this E. ridge, and the latter shows two high and steep steps, one at about 3700 metres, the other at the horizon of the Ober-Studerjoch. Lower down, the rib splits into several smaller ones, the most prominent of which turns sharp E. and, curiously enough, runs almost parallel to the threatening ice-wall which crowns the Ober-Studerjoch. Between this part of the rib and the ice-crowned face is a couloir which receives all falling ice, discharging it on to the Finsteraarfirn not far from the lowest depression of the Ober-Studerjoch. The lower part of the rib under reference thus makes a very effective 'screen,' of which we made full use.

The main couloir of the N.E. face lies between the northerly and southerly ribs or ridges just described. It reaches up from the Finsteraarfirn and is very clearly defined up to about



N.E. FACE OF FINSTERAARHORN.
(Fynn's route).

3900 metres—above that, it gradually loses itself in the loose and in places slightly bulging face.

An outline of our route can now be given. Protected by the 'screen,' the rocks were attacked about 200 metres N.W. of the lowest depression of the Ober-Studerjoch. Climbing up and to the right, the main couloir is reached almost at its narrowest part; one then strikes up and to the left until close under the first big step of the southerly (E.) rib. The main couloir is here wider and offers very easy-going. It was crossed and a bivouac made at about 3550 metres on the S. flank of the northerly (Bell) rib. Continue high up on the S. flank of the Bell rib, over a side rib running S.E. down into the main couloir, and behind it gain the northerly ridge, which is followed more or less closely to the foot of the grey towers and slabs. Roping down into a deep cut couloir on the S., a difficult wall and chimney lead to the grey slabs. The left edge of these offers fair going, and one can presently traverse back to the northerly rib above the grey towers. At this point the rib has all but disappeared; higher up, a stretch of it is again quite pronounced and excessively steep. Continuing straight up, apparently on the S. flank of the northerly rib, a shallow couloir with very few holds is followed to a point where it divides (about 4050 metres). The right arm is short and soon turns into a chimney which ends with an overhang. Our second night was spent in this chimney. The left arm flattens out almost immediately. At the time of our ascent this part was an ice wall; water trickling down the rocks had frozen and covered these with a few inches of ice, leaving an uneven but well-rounded and treacherous covering. Above this ice is the last very steep and often dangerous wall. This is traversed up towards the southerly (E.) rib. As soon as this is reached all difficulties are over, and one gains the main summit from its S. side.

The bivouac, point 1 on the Donkin photograph, was reached in 7 hours 50 minutes of leisurely going with heavy packs and plenty of rests. The rope was not used after crossing the bergschrund. The absence of all difficulties and the inviting, but oh, how deceptive, look of the rocks above us induced laziness and over-confidence, verging on contempt for which we paid heavily. Abandoning blankets, we resumed our climb at 5.23 A.M. on the 13th. We did not care to reach the summit much before noon! The Bell ridge was first reached at 7 A.M., still without using the rope. But here the work changed. To get past point 2 it was necessary to climb

a very difficult chimney on the S. side of the rib. It took us 1 hour 15 minutes, after which we spent 35 minutes over breakfast. But for the heavy cannonade in the main couloir we could have turned this chimney.

On a good day, and there are such—as evidenced by Mr. Hasler's experience—the main couloir can be crossed from this point, and if needful the Studerfirn reached.

Following the rib quite closely, with a rather fine traverse on the S. side, point 3 was reached in 1 hour at 9.50. Here we blundered. To follow the rib seemed impossible, although Fuhrer appears to have just managed to do so; to turn the difficulty on the right seemed feasible, but terribly exposed, while the left appeared to offer an easy way out. We turned to the left, as indicated by the dotted line on Donkin's photograph, and everything went well, as things go on this face, until almost back on the rib, where an overhang denied further progress. Altogether we lost 4 hours 40 minutes at this point. Launching out on the here really appalling N. flank of the Bell rib at 2.30 P.M., the foot of the grey towers was reached at 5. Here we found Mr. Hasler's rope hanging down on the S. side. At 5.50 the grey slabs and towers had been left behind and we were back on the northerly ridge.

The job seemed done, the rocks ahead looked well within our powers. We rested until 6.25, put the rope back into the rucksack, and—found that neither of us could make much progress! Out came the rope and we went at it hammer and tongs. At 9 P.M. we came up against the imitation ice slope previously described, point 5, but decided to leave it alone at that time of night. We spent the night in the chimney on the right, sitting in loops made in our spare rope thrown over a projecting rock above us.

We waited until 5.20 A.M. for the sun to loosen our joints and limber our stiff clothes, then tried to avoid the treacherous ice. Two hours and ten minutes of effort convinced us that as straight up as possible was the better plan, so we went up the ice-slope. The weather was rapidly breaking, the wind was blowing a gale, and it soon began to snow. Climbing up and to the left we reached the southerly (E.) ridge in 2 hours 45 minutes, and 15 minutes later the main summit. It was 10.30 A.M. On this last stretch both of us were hit by stones. We got to the Concordia about 5, and slept for twenty-four hours!

Miss G. L. Bell's Attempt.

After our ascent I heard much about Miss Bell's attempt and the experiences of Mr. Hasler's party. On December 23, 1906, I wrote to Ulrich and Heinrich Fuhrer, Miss Bell's guides, enclosing a photograph on which I marked and numbered the B.-F. route. The numbers on the photograph now given correspond, so that U. Fuhrer's remarks can be accurately followed. The dotted 'S.' route to which he refers is not shown on the Donkin photo. This suggested line starts near the N.E. corner of the Studerfirn, climbs the rib to the N. of the depression marked with the small black circle, crosses the big couloir at about the height of this circle and strikes the Bell ridge between points 2 and 3. I understood that Miss Bell's party had followed the 'S.' route on the way down.

Fuhrer's reply, curtailed in translation, follows. It will be noted that it was written before he read the published description of the B.-F. route.

Meiringen, Jan. 5, 1907.

We spent the night in the Dollfus hut, leaving on July 30 or 31 at 12.30 A.M.

We reached the foot of the mountain and took to the rocks on the right, and not on the left of the couloir as you did. Looking at the photograph you sent, our route up to point '1' lies considerably more to the right than yours. Before reaching the main ridge or rib, several considerable difficulties had to be overcome. I think it was about 11 A.M. when this rib was reached. In the main, we now followed the ridge, inclining sometimes to the right and sometimes to the left. One very difficult place was on the right, the other on the left of the rib before we came to the grey tower, which is about the same level as the Hugi Sattel. The foot of this tower was reached at 2.30 or 3 P.M. I tried unsuccessfully to pass it on the right. Suddenly, it began to hail and the storm broke. We quickly descended a recess in the grey tower in order to climb an ice-filled couloir to the left of it. I had led to this point, my brother now went to the front. When he had got about one-third up the couloir, lightning struck the mountain and a terrible storm followed. An advance was not to be thought of, for showers of stones were falling and the lightning was blinding. We hastened to descend the most difficult place, notwithstanding the snowstorm, in daylight. Snow already covered the rocks and I was forced to abandon one

piece of rope, *i.e.*, I cut it off as high as I could. At the foot of this difficult place was a little niche which held Miss Bell, while my brother and I were slightly protected but our backs were wet. Lightning played for hours during the night, followed by a snowstorm. Immediately on starting in the morning we had to rope down a place, and before night had worked our way down to the snow-slope at the foot of the rib and just above the bergschrund. Protected by the rib from stones and avalanches, we reached the bergschrund. But avalanches fell continuously at the point where the bergschrund could be crossed and at which we had begun the climb on the previous day; avalanches also came down the couloir to the left of which you climbed. We struck the following solution. We closed up to the track of the avalanches and every couple of minutes down came a mass of snow, into which my brother jumped and was carried over the bergschrund, the tightening rope jerking him out of the avalanche. Miss Bell followed, and I, as last man, had the pleasure of a longer ride, being jerked out of the avalanche in the same way. We were at last rid of the mountain and tried to light a lantern, but every match was wet. We tried to get through in the dark, but were compelled to spend another night out, this time on the glacier.

The night was very stormy, and next morning we recognised the danger of the crevasses had we tried to force our way through in the dark. We reached the Grimsel at eleven o'clock, having been out fifty-seven hours, of which, fifty-three on the rope. The climb was a very difficult one; with fine weather, we must have reached the summit at about 5.

You, who have made the climb, will perhaps be able to correctly appreciate our work. But the honour belongs to Miss Bell. Had she not been full of courage and determination we must have perished. She was the one who insisted on our eating from time to time. Looking at the postcard you sent us, we reached the point where your route turns to the left towards the summit [this is surely point 4—V. A. F.], and in descending we followed our ascending line almost without change. We had the route 'S.' in mind on the first evening, when the storm broke, but the driving snow later prevented us from carrying out this programme.

It is still my desire to make this ascent. When I speak of left and right, I mean looking *up* the mountain. It would be a pleasure to me to make your acquaintance. . . .

Yours, etc.

U. FUHRER, Hotel Flora.

P.S.—The most difficult place is at point 3, as you say. I had great difficulty in overcoming this bit; the knowledge that I could not retrace my steps helped me to win out. When up, I noticed that an easier solution could have been found more to the left (east). [This must be the deviation we tried, at point 3. It looks fine and goes well at first, but fails to connect at the very last.—V. A. F.] The other very difficult passage was to the right of the ridge, on the Hugi-Sattel side, where we also left a piece of rope.

We also struck a difficult place on the way down when we left the ridge to follow the flank of the couloir. We had to descend an overhanging rock. Just as my brother had cut a step in the ice, the rock to which Miss Bell was holding gave way and she jumped down on my brother; both rolled the length of the rope. I have to thank an accidental small hold for our safety.

We turned back at about four o'clock. Our bivouac is just under the difficult passage.

We left two reserve ropes behind, one a little to the left, the other a little to the right, of the ridge. We also left several rope rings. We reached your point 4, where your route line turns off to the left in the direction of the ridge.

After having read the published account of our expedition, Fuhrer wrote again on January 25, 1907, and stated that, in his opinion, our route over the lower part of the face was the better.

THE FRESHFIELD GROUP, 1922.
(Rocky Mountains of Canada.)

By J. MONROE THORINGTON, M.D., F.R.G.S.

'Now the ice-world is like a new planet, full of conditions, appearances and associations alien to our common experience; and it is not wonderful that it should be only after a long training, after much fatigue, and dazzling of eyes, and weary steps, and many a hard bed, that the Alpine traveller acquires some of that nice perception of cause and effect—the instinct of the children of nature—which guides the Indian on his trail and teaches him, with unerring philosophy, to read the signs of change in earth or air.'

PRINCIPAL FORBES.

THE Freshfield Group is situated on the Continental Divide, in latitude $51^{\circ} 39' 51''$, between Howse (5010 ft.) and Bush (7860 feet) Passes, an air line of about ten miles, although, due to the southerly bowing of the Divide between the two passes, the actual crest of the group is much longer. On the western

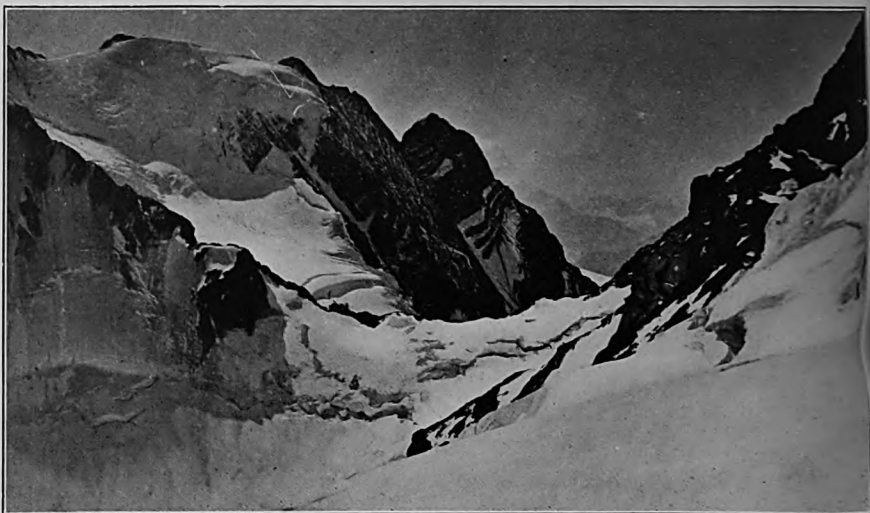
side of the group, the Campbell ice-field forms a chief source of the south fork of Bush river, draining to the Columbia. The Freshfield ice-field, some twenty square miles in extent, fills the eastern cirque, and discharges by a single tongue three miles long and three quarters of a mile wide, the Freshfield stream joining with Forbes brook and flowing into Howse river. [Middle Fork of the North Saskatchewan river.]¹

Howse Pass was crossed by David Thompson as early as 1807²—Joseph Howse, a clerk of the Hudson Bay Company, did not begin to use the pass until 1809—and the route was long in use as a means of communication between the Kootenay Plain and the Columbia valley. There is, however, no mention of the Freshfield group until 1860, when it was visited by Dr. Hector, of the Palliser Expedition, while searching for the northern approach to Howse Pass. He writes: ³—‘At daylight I started with Beads to see where the valley leads to, and after five miles through very thick woods, we suddenly emerged at the foot of a great glacier [Freshfield glacier] which completely fills the valley, and showed us that there was no hope of getting through with horses by this route. We ascended over the moraines, and had a slippery climb for a long way to reach the surface of the ice, and then found that it was a more narrow but longer glacier than the one I visited the previous summer [the Lyell glacier]. The upper part of the valley which it occupies expands considerably, and is bounded to the west by a row of high conical peaks that are completely snow-clad. We walked over the surface of the ice for four miles, and did not meet with many great fissures. Its surface was also remarkably pure and clear from detritus, but a row of large angular blocks followed nearly down its centre. Its length I estimated at seven miles, and its width at one and a half to two miles. By 3 P.M. we had returned to our halting-place of yesterday, and now proceed to try Beads’ valley. For three miles we followed up

¹ Much of the nomenclature used in this paper is recent and anticipates the publication of Part II of the *Interprovincial Boundary Survey*. Old names are [bracketed], and altitudes are given because much of the old data is incorrect.—J. M. T.

² *David Thompson's Narrative*, p. lxxxvi. Champlain Society, Toronto. 1916.

³ *Journals, Detailed Reports, and Observations relative to the Exploration of British North America*, p. 150. Captain Palliser. Folio. London, 1850. [Not in A.C. Library.]



Photo, V. A. Fynn.

PASS LEADING TO BUSH RIVER VALLEY BETWEEN PILKINGTON
AND FRESHFIELD.

Seen from S.E. slopes of latter.



Photo, V. A. Fynn.

LOOKING E. OF S.E. FROM MT. FRESHFIELD.

the stream to the south, till we found that it suddenly rose from a glacier [the Conway glacier] in a high valley to our right. However, as the valley before us continued to look wide and spacious, with a flat level bottom covered with dense forest, we left the river and continued a southerly course, sometimes seeing little swampy streams, which showed us that the water was still flowing to the Saskatchewan. After about three miles we observed a small creek issuing from a number of springs, to flow in the direction in which we were travelling; but we could hardly believe it to be a branch of the Columbia, and that we were now on the west slope of the mountains, seeing that we had made no appreciable ascent since leaving the main Saskatchewan, and had encountered nothing like a height of land. We camped here beside a small lake and beautiful open woods, where the timber is of very fine quality.'

The chief peaks of the group lie on the Continental Divide, subsidiary ridges extending E. and S.-E. to enclose large glacier cirques, of which the Conway, Lambe, Cairnes, and Mummery are the largest. In the group there are approximately thirty peaks of importance, of which at least twenty-four are over 10,000 ft. in altitude. The summits on the Divide are chiefly snow-peaks, those on the subsidiary ridges of the eastern wall being scarcely of less altitude but generally more rocky.

Climbing parties have been infrequent, chiefly because of the distance involved, about sixty-five miles of travel from the railroad being necessary to reach the Freshfield tongue. In 1902,⁴ a party consisting of Collie, Outram, Stutfield, Weed, Woolley, and the guides Hans and Christian Kaufmann, made the first ascent of Mt. Freshfield, 10,495 ft. In 1906,⁵ Burr, Cabot, Peabody, and Walcott, with Gottfried Feuz and Christian Kaufmann, from the Blaeberry valley, made the first ascent of Mt. Mummery, 10,918 ft. In 1910,⁶ Eaton and Marocco, with Heinrich Burgener, made an expedition, and,

⁴ *A.J.* xxi. p. 367; Collie and Stutfield: *Climbs and Exploration in the Canadian Rockies*, p. 251, 266; Outram, p. 320. The first climbing party in the Freshfield Group was that of Collie and Baker, with the guide, Sarbach, in 1897. The only climbing done in the group was a partial ascent of Mt. Freshfield, made for topographical observation. It was at this time that the group and its peaks were named. Collie and party returned to the group in 1902, at which time the first ascent of Mt. Freshfield was made.

⁵ *App.* xi. p. 221.

⁶ *C.A.J.* iii. p. 1.

from a camp at the Freshfield tongue, traversed Mt. Dent, 10,720 ft., and Mt. Freshfield with the intervening snow-dome. First ascents were also made of Mt. Pilkington, 10,880 ft., Mt. Walker, 10,825 ft., and a snow peak on the Divide, south of Mt. Pilkington, for which the name 'Mt. Burgener' was suggested, but which has since been named Mt. Bulyea, 10,900 ft., by the Interprovincial Boundary Survey. During 1917,⁷ the Interprovincial Survey was in the group, occupying a number of high ridges and summits, their chief ascents being Mt. Bergne, 10,420 ft., and Mt. Lambe, 10,438 ft. In 1920,⁸ Eddy, Fynn, and Mumm, with Rudolf Aemmer and Moritz Inderbinen, made the third ascent of Mt. Freshfield. Other climbers who have reached the group have accomplished little or nothing, chiefly because of bad weather.

In 1922, Howard Palmer and the writer, with Edward Feuz as guide, had the good fortune to visit the group and make a number of ascents. Leaving Field on July 6, with an outfit of seventeen horses, under the care of J. Simpson, who had been with Dr. Collie in 1902, we journeyed northward by way of Amiskwi [Baker] and Howse Passes. Our first camp was on the Amiskwi river, below Ranger Cabin, and on the following day we ascended to Amiskwi Pass, 6535 ft. Views of the Van Horne and the northern Yoho peaks are features of the route, Mt. McArthur (Signal 18) being a conspicuous landmark for miles along the trail.

Amiskwi Pass is not a mountaineering centre, as it is scarcely possible to penetrate the northern Waputiks from this side. We ascended the high ridge E. of the pass, Amiskwi Pass East,⁹ 8545 ft., and obtained a magnificent view of the entire area. Across the deep valley of Trapper creek we saw the summits of Mt. Baker, 10,441 ft., Mt. Ayesha, 10,026 ft., with a little lake high up on its S.W. side, Mt. Collie, 10,315 ft., and Mt. des Poilus [Mt. Habel], 10,361 ft. It is possible that climbers might cross to the Collie-Habel col, but cliffs and timber would cause much delay if an attempt were made to take horses to the head of Trapper creek. To the W., we had a splendid view of Mt. Laussedat, 10,035 ft., and the peaks along the Blaeberry river, while further N. the southern walls of the Freshfield Group rose grandly, Mt. Mummery and

⁷ *Interprovincial Boundary Survey Sheet*, No. 18. Topographical Surveys Branch, Ottawa.

⁸ *C.A.J.* xiii. p. 179.

⁹ *Interprovincial Boundary Survey Sheet*, No. 17.

Mt. Cairnes, 10,120 ft., being especially prominent ; the latter is the massive ice-crowned mountain seen to the N. from Amiskwi Pass summit.

Next day we descended the steep northern slopes of the pass, a drop of 3000 ft., to Blaeberry river, forded and camped in the meadows below the mouth of Cairnes creek, with a fine view of Howse Peak, 10,800 ft., in the distance. Our route thence to Howse Pass lay up the Blaeberry, crossing and re-crossing as we approached the summit. We made camp below Mt. Conway, 10,170 ft., in a beautiful spot not far from the pass summit, and spent the afternoon investigating our surroundings. To the N. the western peak of Mt. Chephren [White Pyramid], 10,500 ft., and the twin summits of Mt. Kaufmann, 10,200 ft. and 10,150 ft., afford a fine panorama ; southward, the snow ridge of Mt. Conway and the Conway glacier tongue bound the pass. From the pass summit we ascended the timber cutting, marking the Divide, through the forest for about a mile, and then spent a miserable hour in the bush, working over into the basin of Conway creek above the deep canyon into which the stream descends. The creek heads in a rock cirque over which curls the glacier tongue, The wall could be ascended, from a high camp in this basin, and the glacier explored, but the trip would be a long one ; it would seem to be the best route for ascending Mt. Solitaire. 10,800 ft., the highest peak in the eastern portion of the group. There is possibly a Survey trail through the forests on the W. side of the creek, but we were unable to locate it. From Howse Pass, Mt. Conway could be ascended without much difficulty, and the Boundary Survey has placed cairns on the shoulder to a height of 8951 ft. North of the pass, Mt. Chephren and Howse Peak may be reached by routes which appear long but not difficult. Our camp on Howse Pass was one of the finest ; a crystal-clear evening with a full moon ; a roaring fire and mirth and song far into the night. Stories were told, some so fantastic that if the shade of David Thompson or of Dr. Hector had walked in to listen, it would hardly have surprised us.

The route now lay down the canyon of Howse river, with many little fords and fine vistas of the snowy Waputiks behind us. We soon reached the flats below the junction of Forbes and Freshfield brooks, a wide amphitheatre with the massive outlines of Coronation Mt., 10,420 ft., the saddle of Bush Pass, and the grim towering spire of Mt. Forbes, 11,902 ft., completing a wonderful scene. On a little gravel cliff we had the

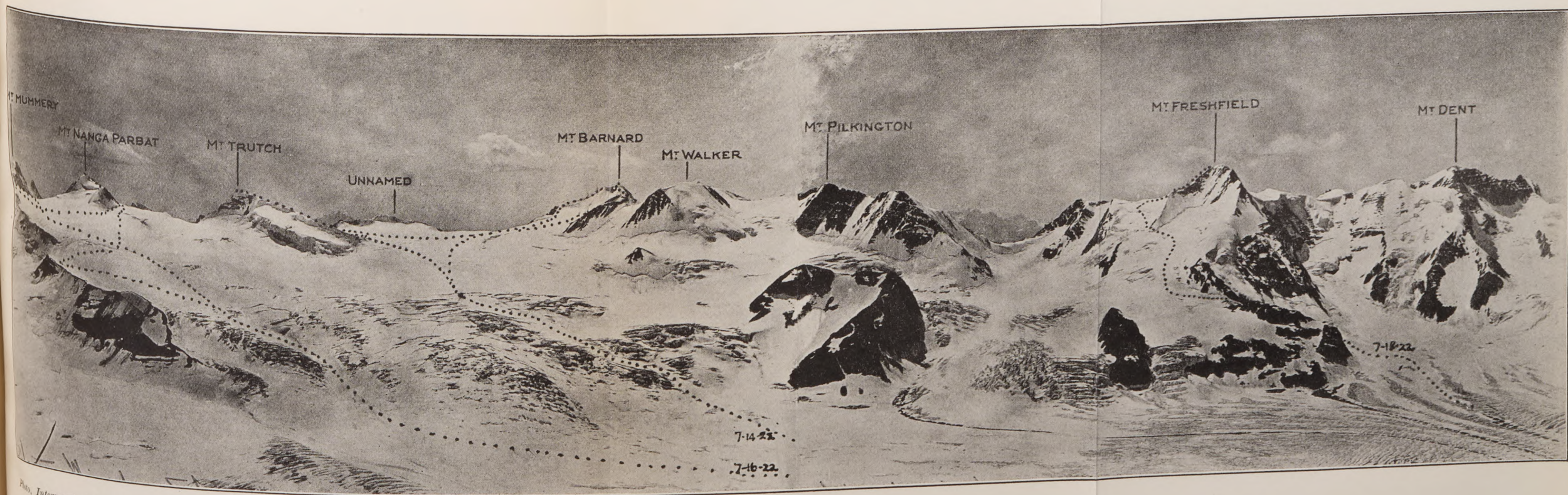
unusual experience of catching a baby goat, the little animal being headed off by a horse on each side and a small creek in front. When several of us approached, the goat gave a frightened leap, fell into the water and was rescued kicking and struggling in the arms of our Swiss guide. Photographs being taken, the goat was released, and proceeded with a damp and injured air down the Saskatchewan gravel bars. We followed a rising trail into the woods and shortly established our Main Camp, 5400 ft., below the Freshfield tongue.

It is an ideal situation: a timbered terrace of old moraine with the great ice tongue less than half a mile away and the pointed summit of Mt. Freshfield rising at the head of the basin. Close at hand, a forget-me-not covered slide affords sufficient horse feed for a moderately prolonged stay; strangely enough, good grass is exceedingly scarce between Field and Howse Pass, and there had been many long morning searches for wandering cayuses.

We had with us the new map of the Interprovincial Boundary Commission, Sheet 18; it names many new peaks, and for the first time gives an accurate representation of the topography. From our study of this sheet, we discovered that there was a peak on the Divide, Mt. Barnard, with an altitude of 10,955 ft., making it higher than Mt. Freshfield and therefore the loftiest of the entire group. The difference in altitude between it and Mt. Barnard is not great; the former lies south of and hidden by the Pilkington-Bulyea ridge and is quite invisible from the glacier tongue. These facts explain in part why the mountain had for so long remained unattacked. We determined to make it our goal.

On July 11 we back-packed an Advance Camp three miles up the ice to the base of a promontory descending southeasterly from Mt. Niverville, 9720 ft. Ascending 300 ft. of scree and grass slopes, one comes to a 'Concordia-platz,' at 7200 ft., where there is a picturesque heather-covered meadow with firewood, water, and small trees. It proved a central point for our climbs and we maintained camp in this position until July 18.

The Freshfield ice-field may be roughly divided into three sections: an ice-fall basin, descending between Mt. Dent and Mt. Walker; an upper snow-basin, rising high up on Mt. Walker, extending southward to Mt. Barnard and eastward to the snow dome of Mt. Gilgit, 10,300 ft., where it drops off in cornices and cliffs; a lower head-basin descending from the slopes of Mt. Barlow, 10,320 ft., and adjoining peaks, and



Photo, Interprovincial Boundary Survey.

MT. FRESHFIELD GROUP FROM MT. BERGNE—*i.e.*, FROM EAST.
(Routes of Messrs. Howard Palmer, and Monroe Thorington).



connecting with the other divisions in a series of ice-falls and flat ice areas that eventually form the Freshfield tongue. From the minor peaks on the S. side of Bush Pass, the Niverville and Pangman glaciers descend into the Freshfield basin, but are at present only loosely connected with the ice-field. The Niverville stream runs under the Freshfield ice, while a subsidiary pressure tongue of the Freshfield basin actually faces up-stream toward the Niverville tongue. Much of the upper ice appears to be stagnant; surface drainage is incomplete, and in the afternoon the ice is covered with water to a depth of six or eight inches. Medial moraines are a striking feature and may often be traced back for several miles to promontories in which they originate.

Climbs from the high camp were made with intervals, during which we occupied ourselves with a photo-transit survey of the glacier tongue and a rough study of the ice movement. The tongue is retreating rapidly, and motion one mile above its terminus during a period of warm weather was about four inches per day;¹⁰ in the week during which observations were made, there occurred a recession of the tongue margin of from four to six feet and a considerable subsidence of the surface. Distinctive dirt-bands were not observed. On the first medial moraine E. of the central axis there is a small area, near the base of Mt. Skene, 10,100 ft., where one may find clusters of iron pyrites, larger than a golf-ball, riding free on the ice surface; this deposit was observed in no other location except for a small bit picked up in the Coronation-Garth gully just below the hanging glaciers. The immense boulders in the medial moraines are remarkable for their average large size;¹¹ their occurrence appears to be related to the so-called 'Block Moraine' and supposedly due to ancient seismic disturbance.¹² While dirt-bands, the bands of Forbes, are not prominent, dirt zones¹³ do occur and are

¹⁰ This is in agreement with the July movement of other glaciers in the main chain.

¹¹ The largest on the ice tongue, E. of the central axis and opposite the Coronation-Garth gully, measures roughly $18 \times 18 \times 60 = 19,440$ cubic feet; it was ascended by Edward, who built a little cairn on top.

¹² *Glacial Studies in the Canadian Rockies and Selkirks*, p. 494. W. H. Scherzer, Ph.D., Smithsonian Institute, Bulletin 1567. Washington, 1905.

¹³ *Loc. cit.*, p. 465. The dirt zones are conspicuous in views of the Freshfield tongue from the main camping place.

said to be brought about by short cycles of variable activity of the glacier-making agencies.

On July 14 we left camp at 8.30 A.M., descending to the ice-field, which we crossed for two miles to the base of Mt. Walker. Thence up hard snow over a much crevassed field,¹⁴ requiring many deviations, we reached the upper snow basin. On rounding the eastern shoulder of Mt. Walker, we saw Mt. Barnard far ahead of us. As a mountain it will disappoint no one, and its appearance far exceeded our expectations. On its north-eastern side it is snowy, the main ridge running N.W. and S.E., and the face broken by large schrunds. It is a Lyskamm in miniature, while the summit, to the N.W., rises to as sharp a snow-spike as one is ever apt to see.

Crossing a mile of flat snow, gradually rising to 9500 ft., we reached the base of Mt. Barnard at its south-eastern end; here was the only visible point where the schrunds were sufficiently bridged to permit crossing, while above the snow was steep. We crossed and found the snow dangerously soft; a traverse to a rock outcrop only a few yards away was abandoned because of the danger of starting an avalanche; the rock itself looked insecure. There was no alternative but to ascend directly to the ridge, up several hundred feet of snow that might give way at any moment. Moving cautiously and anchoring as well as possible, we arrived safely, but could not have descended with any feeling of pleasure. Once on the crest, the outlook was more favourable and footing was at least secure; this we soon found not exactly true, as a high wind met us and on several occasions nearly lifted us off of our feet. On the southern and western sides the mountain falls in sheer cliffs to Waitabit glacier and the Campbell ice-field, the two basins separated by a tremendous serrated ridge with couloirs descending for nearly 2000 ft. without a break.

Our way lay along the snow ridge, with considerable cutting around the couloir heads; ice was encountered in several places, but never in amounts sufficient to delay us. Two hours more brought us to the base of the snow spire, a steep ascent placing us on a top scarcely big enough to hold three of us at once. (10.15: Camp to summit 6 hrs., 45 min.)

¹⁴ Some of the crevasses were very large, 100 ft. wide, 150 ft. deep, and over 500 ft. long. They were sharply cut and often snowed up flatly and solidly at the bottom; one could have roped in and walked around for some distance at the bottom.

The highest summit of the Freshfield Group was ours, and from snow conditions encountered it is quite evident that the mountain should only be attempted from a high camp ; the distance from the glacier tongue is so great, nearly eight miles, that only from an advanced position can one hope to reach the upper snows at a favourable hour. Distant views were obscured by smoke, but the tremendous drop on the western side was always spectacular. A cairn was built on the highest rocks, and we proceeded back along the ridge for several hundred feet to a point where a traverse could be made to the sharp N. arête descending towards Mt. Bulyea. The snow was in better condition than that previously met with, and we rapidly made our way downward, finally glissading into the basin to the E. and regaining our old track.

The day was not yet far advanced (11.30), and being close to the base of Mt. Trutch, 10,690 ft., we decided to ascend it. This mountain is peculiarly wedge-shaped ; a single N.W. arête rises like a ridge-pole to the summit, followed on the far side by a sheer drop to the ice as nearly perpendicular as is possible to imagine. On the N.E. face a steep hanging glacier and, on the S.W., a cliff descends to the snow basin. The arête itself is of shale and snow and presents no great difficulty, but the last 400 ft., invisible from below, turned out to be a knife-edge of rock, which had to be straddled, and took nearly an hour to negotiate. We reached the summit (2.0 P.M.) and built a small cairn ; ten hours had elapsed since starting, and two first ascents were our reward. There was no alternative route but to retrace our steps, so we faced about, reached the snow-field, and tramped back to camp (6.15) feeling that our day had been a successful one.

To the E. of Mt. Trutch rises the symmetrical snow-peak of Mt. Nanga Parbat, 10,780 ft., and, further E., the dome of Mt. Gilgit, heavily corniced on the N.E., where it falls off to the lower head-basin of the ice-field. On July 16 we left our high camp (3.45), crossed the ice, and ascended the crevassed draw just W. of the conspicuous rock ridge and moraine descending from Mt. Gilgit. Reaching the upper basin, we crossed to the base of Mt. Nanga Parbat, worked across a little schrund and up the shaly buttress to the N.W., which from camp looked like an enormous gendarme. We piled up a few stones, and then followed a rising snow-ridge to the summit (9.35). Clouds were blowing in, and after a

short rest we descended along the south-eastern rocks to a point where snow slopes on the W. allowed us to cut down to the bergschrund; this was jumped—our form was execrable—and the base of the mountain skirted to its northern side. Keeping high on the slopes, we crossed to Mt. Gilgit and ascended it from the W. (12.15).

The weather, which had been smoky, cleared suddenly, and we enjoyed some splendid views; to the N. across the ice-field, the magnificent pyramid of Mt. Forbes dominates the panorama, with Mt. Columbia and the Lyell summits on one side and Mt. Brazeau with its snow-field on the other. We could pick out summits on the Divide from Howse Pass as far S. as the Lake Louise district. E. and W. of Mt. Gilgit, high passable cols¹⁵ connect the Freshfield basin with the Blaeberry valley; the S.E. ridge of Mt. Nanga Parbat curves brokenly and ascends to the spires and pinnacles of Mt. Mummery, whose tremendous black precipices wall the head of Waitabit valley. To the S.W. the rugged peaks along the Blaeberry, and, further W., the Blackwater range, are separated by the Waitabit gorge, through which we had dim, fleeting glimpses of the Columbia valley and the Selkirks.

We descended to the Gilgit-Nanga Parbat col [the 'upper Blaeberry-Freshfield col'], ca. 10,000 ft., and regained our old route of ascent, which was retraced to camp (4.45). Two more first ascents had fallen to our share.

On July 18 we made the fourth ascent of Mt. Freshfield,¹⁶ our time from the high camp being five hours (4.0–9.0). The route up a broad snow-filled gully, just E. of the Freshfield-Dent ice-fall, leads over to slopes opposite Mt. Pilkington; ascent was made obliquely to the S. and the summit gained by the easy southern rock ridge. The day was smoky, and we had no distant view;¹⁷ descent to camp was made in

¹⁵ These cols might be practical for mountaineers, in crossing from the Blaeberry valley to Freshfield glacier, providing supplies were made available at each end of the route.

¹⁶ See footnotes 4, 6, 8.

¹⁷ Our barometer, set on Howse Pass and carried to the summits of both Mt. Freshfield and Mt. Barnard, showed 148 ft. in favour of the latter; weather was settled throughout our stay, and there was practically no barometric fluctuation during the climbing period. A level carried to the summit of Mt. Freshfield adds to the evidence in favour of Mt. Barnard being the highest summit in the group.

record time (9.50–12.20), and after lunch we packed our belongings down to the Freshfield tongue.

On July 20 Edward Feuz and the writer made the first ascent of Coronation Mt., 10,420 ft. This is the fine, massive peak named by Collie,¹⁸ and is well seen from the mouth of Forbes brook as a huge, broad-based rock mountain with a steep glacier on its northern face. We left camp at 4.0 A.M., ascended the ice for a mile and a half, and took to the bush on the N. side of the Garth-Coronation gully. At timber line, steep grass slopes and loose rocks lead to morainal débris below two small hanging glaciers; the tongue to the N. was reached without difficulty and the snow above ascended, a sharp watch being necessary because of occasional stone-falls from near-by cliffs. The slopes were steep and hard, requiring considerable step-cutting before the arête was reached, E. of the pyramidal summit. Two rocky gendarmes were traversed below the top, the sheer drop to Forbes brook making it an exciting performance. Mt. Forbes was directly opposite, its superb ridges looming dimly through the smoke; but we had no distant view, and a chilling wind compelled us to beat a retreat after building a summit cairn (9.15). Glissades and steep slopes made the descent rapid, and we arrived in camp (12.30) in time for lunch.

There is a Survey cairn at 10,380 ft., on the W. arête of Coronation Mt., perhaps 500 ft. from the summit; the intervening arête looks difficult, and at times may possess a cornice; the Survey climb was doubtless made from the direction of Bush Pass. We feel justified, therefore, in claiming a first ascent, although this in no way detracts from the work of the Survey, whose interest in first ascents is not a primary one. We are eager to acknowledge the accuracy of the Survey maps, which we continually made use of, and can testify to the extraordinary labours of the Survey as evidenced by their high stations which we constantly observed.

Our programme was now completed; six 10,000 ft. peaks had been ascended, five of them first ascents; a survey of the glacier tongue was concluded, and rate of flow measured on a line one mile above the ice terminus.¹⁹ Forest-fire smoke,

¹⁸ *C.* p. 276; *O.* p. 346.

¹⁹ The ice is here about three-quarters of a mile in width. Fourteen stations, with 150 ft. intervals, were lined out across the ice; about 400 ft. of surface moraine intervened between the lateral

always a drawback to Canadian mountaineering, continued ; on July 21 camp was broken.

We descended Howse river flats, and that night camped on the river bank below the stream from Glacier lake. Alpine flowers are in profusion throughout the valley, the gravel bars being covered with Painter's Brush and Fireweed—tomato red combined with magenta—giving the flats a gay and gaudy appearance. Next day, the only real rainy day, we rounded the base of Mt. Sarbach, 10,200 ft., ascending Mistaya River [Bear Creek] to the foot of Mt. Chephren [Pyramid Mt.], where camp was made. During the evening the weather cleared, giving us views of Mt. Kaufmann, Mt. Wilson, 11,000 ft., and Mt. Murchison, 11,800 ft., gleaming with new snow.

A trail entirely on the W. side of Mistaya River now obviates the old difficult fords. Next day we crossed Bow Pass, 6868 ft., to Bow Lake, clear weather affording us a view of giant peaks far to the N. in the vicinity of Wilcox Pass. S. of Mt. Chephren, Howse Peak and the Waputiks form a stupendous wall, through gaps in which we had glimpses of fine snow-peaks ; Mt. Barquette, 10,080 ft., far across Peyto Lake ; Mt. Patterson, 10,490 ft., with its slender interlocking ice-falls ; Mt. Rhondda, 10,025 ft., seen across the Bow glacier. On the eastern side of Mistaya Valley the peaks are slightly lower and more separated ; rocky pinnacles above the Wild-fowl Lakes, pyramidal Silverhorn and the rounded summit of Observation Mt., 10,214 ft., the latter forming the N.E. buttress of Bow Pass.

Our camp on the lake was finely situated in a grove of old trees extending to the water's edge ; deer came down to drink and frequently walked through the camping ground. Fine trout abound in the lake, but the larger ones were always too much for our primitive tackle. Through a gap at the end of

stations and the ice margins. Measurements were made on July 19, the observations lasting one week :

Station.	Inches per week.	Inches per day.	Station.	Inches per week.	Inches per day.
1	24	3.42	8	27	3.85
2	18	2.57	9	26.5	3.78
3	25	3.55	10	24	3.55
4	26	3.71	11	28.5	4.07
5	18	2.57	12	28.5	4.07
6	26	3.71	13	29	4.14
7	22	3.1	14	23	3.28

the lake the snow-slopes of Mt. Hector, 11,135 ft., rise to a bifurcated peak at the southern end; opposite us the cliff wall beginning at Bow Peak, 9184 ft., supports the Crowfoot glacier, while further N. the Bow ice-fall breaks through between St. Nicholas Peak, 9616 ft., and Portal Peak, 9552 ft., the latter adjoining the rocky ridge of Mt. Thompson, 10,097 ft. In an hour one may round the lake to the Bow ice tongue and the gloomy water-cut canyon below it.

The distance from Bow lake to the railroad, twenty-six miles, was broken by a camp on Hector slide, N. of which is the jagged ridge of towers making up Dolomite Peak, 9818 ft., while down the valley one sees the peacock-blue water of Hector lake and the delta made by the entering stream from the glaciers of Mt. Balfour, 10,741 ft.; and finally, through a rift in the clouds, the groups above Lake Louise burst into view, Mt. Temple and the Victoria ridge rising above all the rest. Our expedition was at an end.

But let no one think that climbs in the Freshfield Group have been exhausted. More than half of the peaks, many of them well over 10,000 ft., remain unvisited; Mt. Freshfield is the only summit that has been climbed more than once. Several of the unclimbed peaks appear difficult; of these, Mt. Garth, 9970 ft., Pangman Peak, 10,420 ft., Mt. Helmer, 10,045 ft., and Mt. Solitaire, 10,800 ft.—to mention only a few—should keep strenuous climbers out of mischief for at least a week or two. Nowhere in the Rockies can one reach such a tremendous ice-field with greater ease; there are still problems for the student of glaciology, and, in this area, there are many unanswered riddles. For the alpinist, the possibility of establishing a high camp in a central position will ever be an advantage when distant peaks are to be gained. Much remains to be done; much that will make a journey to our high meadow a happy memory.

Note.—It is hoped to publish in the next JOURNAL the Boundary Commission's map.

HIGH-LEVEL SKI-ING IN SEPTEMBER.

BY L. C. M. S. AMERY.

WHEN at the beginning of September a week of incessant bad weather had put an end to any hope of serious climbing in the Oberland for some days, and possibly for the

season, I borrowed a pair of skis and went up to the Jungfrau-joch in order to explore the possibilities of an alternative to mooning about the hotel down below. I took with me Gottlieb Feuz, a Mürren guide accustomed to winter and spring ski-ing expeditions, and picked up a porter at the Concordia in the shape of the hutkeeper's boy, a useful addition both for the purpose of ski-carrying, when required, and for safety on crevassed snowfield. The next day was fine and we climbed the Ebnefluh, all but the last 600 feet on skis, and had a splendid run down. The pleasure of the first part of the run, it is true, was mitigated by having to ski on the rope, owing to open crevasses. To good ski-runners this, if done in échelon and not in line ahead, is quite compatible with fast going, but requires much mutual forbearance and evokes no little profanity in a party whose members are at all prone to tumbling down.

On the following day we crossed the Grünhornlücke, running down over hard snow crusted in waves, carried our skis laboriously up to the Rothornsattel, and then ran down over excellent snow across the upper Galmifirn and so to the Oberaarjoch hut. We had originally intended to complete the day by climbing the Galmihorn, which, according to Mr. Arnold Lunn's excellent little Alpine Ski Guide, offers a first-rate run down. But the weather looked so promising that we decided to rest and have a try for the Finsteraarhorn next morning, in the hope that enough snow might have melted off to make the climb possible. As it turned out, it snowed all night, and next morning, in fog and snow, we slithered slowly and cautiously over what would otherwise have been a splendid ski-run down the Oberaar-Glacier and thence to the Grimsel.

“ These doings would not be worth while recording in *THE JOURNAL* except for the moral. By using skis I was able, in a brief oasis of three fine days in a wilderness of execrable weather, to climb one 13,000 ft. peak and a series of passes, and might, given one fine day more, have snatched a big rock climb as well. In any case I got in several days of exercise and amusement. Without skis to fall back on I should probably have hung about the hotel for two days discussing weather prospects with my guide and then made a futile expedition to a hut on the third. So I wish to announce myself a convert to the gospel of high-level ski-ing as a resource for the climber to fall back on in bad weather, even in August and September, the worst ski-ing months. I am not sure, with this alternative

before one, that there is not much to be said for shifting one's base altogether from the valley hotel to a high-level hostel like the Concordia. And, lastly, I have tasted enough of the delights of high-level ski-ing, under not too favourable conditions, to believe that it must be almost ideal in May and June, when there is abundant snow of the best kind and all the crevasses are bridged.

BRITISH MOUNTAINEERING: ITS DEVELOPMENT AND
CONTRASTS.

BY GODFREY A. SOLLY.

[Read before the Alpine Club, April 4, 1922.]

IT has been said that modern climbing in the Alps dates from the ascent of the Wetterhorn by Sir Alfred Wills in 1854, and from the charming description in his 'Wanderings in the High Alps.' With equal truth it may be said that modern British Mountaineering dates from W. P. Haskett-Smith's solitary ascent of the Napes Needle on Great Gable in 1884, and from the well-known articles on Lake District climbs by C. N. Williamson, in vol. xxv. of 'All the Year Round,' for 1886.

In fixing up this date I am not forgetting the brilliant climbs in Skye by Charles and Lawrence Pilkington in 1880 and the following years, but I look upon these as derived more from the spirit of the Alpine Club than as connected with any deliberate intention to cultivate British climbing as a sport by itself. Their expeditions were to a large extent incidents in holidays otherwise devoted to shooting or fishing.

However, 'Vixere fortes ante Agamemnona,' and as we have found it a delight to learn the history of Alpine climbs before 1854, so I may give a few notes of expeditions in Great Britain made long before 1884. The first mountaineers that I need mention are, in Scotland, those who built the vitrified fort under the shadow of Ben Nevis, and in England the men who made the road from Ravenglass to Langdale over Hardknott and Wrynose passes, and lived at Hardknott Castle in sight of Scafell. They left no written records, but they must have been hardy men, worthy ancestors of great peoples.

Passing through the centuries, one may justifiably assume that nearly all the higher mountains had been climbed by shepherds or hunters from time immemorial, but there is no

actual claim by anyone to have made the first ascent of Ben Nevis or Snowdon or Scafell Pike. From about the middle of the eighteenth until the end of the first quarter of the nineteenth century, we find that numbers of travellers, of whom many printed their journals, made walking or riding tours through Wales, Cumberland, and the Highlands, the most famous being, of course, Dr. Johnson.

These journals contain more reference to the dirt and discomfort of the hotels than to the beauty of the hills, but the writers should be held in honour, as imbued with more initiative and more of the spirit of adventure than most of their contemporaries, and as comparing not altogether unfavourably with the pioneers of the Alps.

Some, like Thomas Gray the poet, had the true eye for mountain scenery. After his visit to Cumberland in 1769 he speaks of 'A broken line of crags that crown the scene.'

Nearly fifty years later the poet John Keats also made a northern tour. He intended to ascend Helvellyn, but it was wet, and he wisely gave it up. A day or two later he started for Skiddaw at 4.0 A.M. On the ascent he had liberal supplies of rum and water, by the help or in spite of which he nearly reached the top in two and a half hours. A cloud then capped the summit and he returned. In Scotland he was more successful and ascended Ben Nevis, where we have a picture of him as seated near the summit looking down the precipices between the Tower Ridge and the North-east Buttress, and watching the continual shifting of the clouds about him. He composed the sonnet :

Read me a lesson, Muse, and speak it loud
Upon the top of Nevis, blind in mist
I look into the chasms, and a shroud
Vapours doth hide them—just so much I wist
Mankind do know of hell—I look o'erhead,
And there is sullen mist—even so much
Mankind can tell of heaven—mist is spread
Before the earth, beneath me—even such
Even so vague is man's sight of himself.

And so on.

These lines show that even if he had not yet learned to see the beauty of the hills, he could appreciate their grandeur, and was feeling after the mystery that surrounds them.

One other tour I must mention, that of Thomas Wilkinson, a Cumberland man, published in 1824. He ascended

Skiddaw and many other mountains, as well as Ben Nevis in Scotland, but he failed to find a way up the Langdale Pikes. On another day he crossed the Sty Head Pass. At the top he met a tinker with his laden ass, but not realising that where a laden ass may ascend a man may safely descend, he was almost overcome by terror as he went down the path to Wastdale, past the precipices that skirt Great Gable.

But times were changing, and two years later, in 1826, a young cooper of Ennerdale ascended the Pillar Rock by the old West Route. The Rock till then had not been climbed, though many of the natives had attempted it; this year, 1826, ends, I consider, the first period of British mountaineering.

The next period, so far as England is concerned, was mainly taken up by climbs on the Pillar Rock, and extends until 1882. There is no record of any ascent of the Rock by any tourist until 1848, when Lieut. J. Wilson, R.N., of Ambleside, went up and left a bottle for names of travellers. In 1850 six names were found in the bottle, and in 1861 the first known ascent from the East was made.

By this time the Alpine Club was at work and climbing was becoming more fashionable.

In 1863 a large party made the ascent by the Slab and Notch and round the ledge. Captain J. R. C. Campbell, one of the party, was the first member of this Club to ascend the rock. About that time we find records of climbs by Leslie Stephen, A. J. Butler, and J. M. Elliot, and in 1869 by Charles and Lawrence Pilkington, aged 19 and 14. In 1872 the Pendlebury Traverse variation was made by the brothers Pendlebury and F. Gardiner. The party had failed to find the usual route, and then Gardiner suggested and climbed by the Traverse and the Crack. Mr. W. M. Pendlebury told me when I saw him for the last time, only a few weeks before his death, that they wanted the climb to be called after Gardiner, but that their names were much better known in the District and so became attached to it.

In this second period the climb by Broadstand from Mickle-dore to Scafell was made, and there is a record of an ascent in May 1862 by the late Mr. Utterson Kelso, armed with an umbrella only. He found his weapon unsuitable, but got up. The best climb made in the period was the North Climb on Scafell by Mr. Cundall, and repeated by Mr. George Seatree a year or so later.

The third period is from 1882 until 1897. In 1882 Mr. Haskett Smith first came to the District. Captain Farrar left

a note-book for names on the Pillar Rock, and Mr. Mumm is reported to have walked down Deep Ghyll in snow without knowing that there were two steep pitches under the snow. Perhaps he will give us the truth about the expedition.

From then until 1897, when the late O. G. Jones's book was published, a continuous attack on the ridges and gullies of the district was kept up, in which many of those in this hall took part. At first, as our President has elsewhere written, the great delight of the Cumberland climber was in gullies, but since that time the ridges and faces have been thoroughly explored and the standard of climbing has rapidly improved.

At first most of the climbs were led by men who had gained experience in the Alps, but that stage passed, and some who had done little or nothing in the Alps, such as J. W. Robinson, the brothers Abraham and the late O. G. Jones, and in Wales O. G. Jones again and W. E. Corlett made many first ascents.

Of the last period from 1897 to the present time I can say little. Climbs that we considered impossible, or at least unjustifiable, are done by many, and climbers of a younger generation, bareheaded and barefooted, scamper about the rocks like their simian ancestors—a clear case of reversion to type. I have no hesitation in describing the standard of Lake District climbing as very high indeed. I think there can be none better in the world. It is not simply that one or two are capable of leading, but considerable numbers have learned to go well and can, save exceptionally, lead in their turn. Their knowledge of the management of ropes and belays is excellent, and they use nailed boots or rubbers, as may seem best at the time. They climb at all seasons, gaining experience of wet and iced rocks, and in winter, when mists are so common, they learn to rely upon the compass and aneroid.

I should like to say a few words about the climbing in Scotland on the mainland. It followed much the same course as in England, but there is one mountain there, the Cobbler, which no one could get to the top of without using his hands. In spite of this, there was a tradition that each head of the Campbells of that district, on coming into his chieftainship, had to climb to the summit of the Cobbler.

Of the early Scottish mountaineers I only mention one, Dr. John MacCulloch, an intimate friend of Sir Walter Scott. He lived from 1773 to 1835, and during that time ascended very many mountains throughout Scotland and the Western Isles. He climbed year after year for the pure love of the hills, and was indeed a worthy pioneer.

In 1889 two now famous clubs were founded, the Scottish Mountaineering Club and the Cairngorm Club. The latter, with head-quarters in Aberdeen, has concentrated mainly on the Cairngorms, and has been more of a fell-walking than a rock-climbing club, although several good mountaineers have come out of its ranks.

The S.M.C. from the first started as a club for snowcraft, and in a letter that appeared in the Glasgow press on January 10, 1889, Mr. Naismith, the founder of the Club, pointed out that 'winter climbing in the Grampians afforded a very fair substitute and excellent preparation for subsequent scrambles in the Alps.' For the first few years of its existence the members of the Club did little more than make ascents and traverses from top to top over the slopes of winter snow and ice, though our President, Dr. Collie, under the inspiration of Mr. Colin Phillip, had made some notable rock climbs in Glencoe and Skye and elsewhere; but at Easter 1894, a year of exceptionally deep snow, Dr. Collie asked the late Joseph Collier and myself to join him, and under his guidance and favoured by fine weather we made some notable ascents by hitherto unclimbed routes. I think that that trip gave the necessary impetus to the Club, for immediately afterwards the Scottish members began to explore the precipices of their own hills in a way they had never done before. There were brilliant climbers in the Club, Naismith, Maclay, and Gilbert Thomson amongst the strongest, followed a year or two later by Raeburn, Ling, and many others, and now there can hardly be a steep face or gully in the Highlands that has not been well explored both in summer and winter.

The exploration of the Coolin of Skye began independently of the Club, and owes much to the enthusiasm of Sheriff Alexander Nicholson, after whom Sgurr Alasdair is named, and of Professor James Knight of Knight's Peak on Sgurr nan Gilleann, who were climbing even before the visit of the Pilkingtons in 1880; but since their time climbers have flocked to those hills in ever-increasing numbers, and the S.M.C. has held many official meets in the Island at Easter or Whitsuntide.

I have tried to show that a man who has graduated on the English rocks and the winter snows of the Highlands is worthy of the name of mountaineer, although he can have no practical knowledge of crevasses nor of many glacier conditions.

As a rock-climber he has climbed rocks such as we are

seldom called upon to face in the Alps ; he knows more about ropes and outfit in general than most of us older men did when we were elected to the Club ; he is often a photographer, and in many cases he is steeped in the literature of the Alps, and if he is a man of perseverance and has got through the recent books of Geoffrey Young and Raeburn, he knows all of the subject that books can teach. As a snow-climber he has learnt to walk on steep snow. He has cut innumerable steps in ascending ice-gullies ; he has passed under or over cornices and seen avalanches ; and, above all, he has learnt to find his way in fair weather or foul, and often after the close of day by compass, aneroid, and map over a very considerable mountain district, knowing that the penalty of a mistake may be a night in the open.

I have myself cut steps down an ice-slope on Ben Lui for twice the length of an 80-foot rope, and then 20 feet more before I could kick a step. I have seen a member of this Club blown off his feet in a corrie on Ben Nevis, and another member had a similar experience on the plateau of Braeriach. I have been near the top of Cairngorm when the thermometer was about zero, and we dare not wait to eat our lunch, and had to cease from a descent by comparatively easy rocks because all could not keep moving together, and it was too cold for anyone to remain still.

I was on Bidean-na-Bian at Easter in 1921 in such a blizzard that we could hardly stand, and could not see 5 yards in any direction. We started down at once, but in about 15 minutes found that we were going too far to the south. Not one of us wished to face the top again, although the traverse at a lower level necessarily involved a longer walk over strange ground that was difficult in those conditions. Incidents such as these are not isolated. They are the training willingly endured and enjoyed that has led over sixty members of the S.M.C. to go out to the greater mountains of the world and to qualify for and be elected to this Club.

A few words as to the contrasts between climbing at home and abroad.

British expeditions are short, and in many respects easier and less trying. You start from an hotel after a night's rest and a proper meal. You are fresh when you come to your climb. You have not the heavy load that must so often be carried in the Alps. On the actual climb you can often go without any load, even without coat or boots. In this way you may climb rocks such as few parties care to try abroad.

If you have 4000 feet to ascend and descend in the day you can seldom afford to spend an hour upon 100 feet. I have heard it suggested that English mountains are more difficult than Swiss. That, of course, is nonsense. Within a short distance of any mountain hotel in the Alps you can find cliffs that no one would dream of trying.

At home you seek for the most difficult places for the pure fun of the thing. Abroad you seek to avoid them. That is, having chosen your route, for the most part it is advisable to follow it by the easiest way.

At home there is little danger from thunderstorms or from change of weather, and the risk of frost-bite is small, and can easily be guarded against, and if you can get up your peak there is always, excepting in Skye, an easy way down. At home snow is almost always in good condition, and although there are cornices and avalanches you can generally foresee the event and avoid danger. The mountains are smaller, and there cannot be the danger of falls of ice or snow starting several thousand feet above you, but they are big enough to afford glissades of several hundred feet, without much danger of finishing on an ice slope.

In some ways I think the home mountains gain by contrast with the great Alps. You can more easily get in Scotland in the climbing season the rest that comes by solitude, and solitude is not shut out by the presence of one friend or two. You may see the footprints in the snow of your companions on a Scottish hill at Easter, but the sense of quiet and of isolation from all else is more real than on many Alpine peaks. There are not so many empty bottles and sardine tins. Again, at home you are below the permanent snow-line and see more of the life of beast and bird and plant than you can above—an added interest to your holiday.

And last, and perhaps above all, the colouring is different, and to me there is more charm in it at home than abroad. There is nothing that you can compare with the grandeur of the ice-clad ridges of the great mountains, nor of a sunrise on Mount Everest, such as Mr. Mallory has described, nor of the evening lights as seen from some high hut or mountain gite, but in the dainty scenery of the English Lake District you have a priceless gem. One might as well compare a little Birket Foster water-colour with some famous landscape in oils. Both are beautiful, almost perfect in their own way, but absolutely different. And then, what of the colour in the misty Isle of Skye, or, as you walk up the Allt a Mhuilinn,

with, on your left, the warm brown of dead bracken and heather on the slopes of Carn Mor Dearg, and on your right the ice-clad ridges and gullies of Ben Nevis all glistening in the sun. I know of nothing to compare with these.

I am not here to advocate one kind of sport or the other. I was a member of this Club before Slingsby introduced me to the cliffs of Cumberland or Collie led me to the Highlands. I say that both are good. The honoured founders of this Club built better than they knew.

The sport that was once limited to dons and barristers and others with a long vacation is now the pastime of thousands. It has reached an ever-widening social circle of men, and lately of women. It has promoted the love of nature and the open air, and in a small way is one of the features of English life that may help to bind all classes together in the ways of right living and good fellowship.

THE LATE DR. KELLAS'S EARLY EXPEDITIONS
TO THE HIMALAYA.

[The following letters and records of one of the most indefatigable explorers whom this Club has had the honour to count among its members deserve a place in the JOURNAL]

November 11, 1918.

DEAR CAPTAIN FARRAR,—I have pleasure in sending you herewith the complete itinerary of my tour in 1907, but sincerely trust that you will not waste a line of the ALPINE JOURNAL with it at any time. Our attempts on Simvu were less difficult than an attack on Mt. Blanc from the Grands Mulets after a little fresh snow, and I would as soon think of sending you for publication an itinerary of a traverse of Switzerland from Brigue to St. Moritz *via* Furka, Oberalp, and Julier, as one of the crossings of the Pir Panjal. I suppose you want the notes in case they might be useful for subsequent reference.

The trip of 1907 was interesting enough as an introductory tour, but I do not count it as one of my mountaineering expeditions at all, because the climbing done was negligible in quantity. The first mountaineering expedition was in 1909. Any impressions of the tour of 1907 so far given are mere fragments in the contributions to the 'A.J.,' and such notes are more liable to misconstruction than a consecutive

account, because, being more or less parenthetical, they have to be abbreviated as far as possible. One cannot, for example, compress a guide to the Pir Panjal route into a paragraph. Perhaps a few further notes might make my estimate of this tour clearer.

As regards the Pir Panjal (which would probably make a delightful tour in June or September), there was nothing even during the height of the monsoon to stop a well-grown schoolboy except a few of the fords between Poshiana and Baramgalla. North of the mountains there was no difficulty except the Rambiara, and it would be possible to make arrangements by which it would be unnecessary to cross it. At the first village on the S. side (Poshiana), the people so disturbed my guide that he declared we must wait some days before the crossings would be practicable, but, as I insisted on proceeding without even a day's delay, he took seven extra men, some of them fine muscular hillmen, to help at the fords, so that we made a strong party. I think we avoided a few fords by traversing along the rocky banks, but am uncertain on this point, as my guide could give me no definite information. Greatly to the surprise of my guide (and the others), I crossed a few of the easier fords alone to gain experience. Some, however, I could not have crossed unaided, as the rush of water was too great.

Our stalwarts all left us at Baramgalla, and south of that place we were a weak party. At Rajaori, the man who tried to take me across was unequal to the task, and I got rather wet, and just missed immersion by help from a man I had fortunately summoned alongside. There is no danger at that place as there is a tract of meadowland, and depth was the only difficulty. It is probable that we did not cross at the right place. The river here runs like a canal between embankments, and some cattle were swimming not far off. There was no opportunity for investigation of the mountain or river relationships here, because of weather conditions, and we were off at 5 A.M. next morning for a double march. I am uncertain why three men attempted an aberrant crossing in the circumstances, with all the rivers in flood, but have no reason to doubt the guide's statement, made immediately we reached the first villages. In some ways he was unreliable (e.g. in connection with ornithology), but not as regards current events.

Although three double marches were effected in the aggregate, yet three days were lost (Rembiara, Naoshera, Railway), so

that the actual time taken for the transit was exactly the normal. This might be accounted passable for a beginner, considering the monsoon conditions, but it was far short of what was intended, and although greatly interested with the route, I was not satisfied with the results. The unfulfilled programme had included camping on the summit of the pass, and ascent of a peak 15,000 ft. high to view the Vale of Kashmir, and examine the Nun Kun Peaks to the N.E. and the Nanga Parbat group to the N., pioneer scientific work, and sufficient double marches to enable one to get a glimpse of the hills N. of Simla and to visit Agra (Taj Mahal, etc.). The discrepancy is considerable, and these ambitions have not been fulfilled so far. It was necessary to be back at Darjeeling by August 19 as the guides were expected, and we arrived together.

As regards the tour from Darjeeling to the Zemu Glacier, it was certainly of a very mild order. I had expected to ascend Simvu (22,800 ft.) and perhaps to attain 23,000 ft. on Kangchenjunga. Our failure on the former mountain, and the negligible scientific results, owing to breakage of some glass apparatus on the Pir Panjal, made me determined to return and try climbing with Nepalese coolies, who seemed to me more at home under the diminished pressure than my European companions. I do not think it necessary to add anything to the notes of this part of the tour, as Mr. Freshfield's book fully explains the whole route.

Yours truly,

A. M. KELLAS.

TOUR IN INDIA 1907.

3rd August. Leave Srinagar with 3 men and 2 ponies about 4 p.m. after heavy day's rain to cross Pir Panjal to Gujarat. (Ultimately reached Kharian instead.)

5th August. Near Shupiyan, but delayed because unable to cross the Rembiara River (trib. of Jhelum).

6th August. Ford river to Shupiyan on right bank, but forced to reford, because a bridge near Hirpoora is reported down. Entire day lost.

7th August. High camp on the Pir Panjal, a few miles E. of Alliaabad Serai. Transient superb views to N.E.

8th August. Cross Pir Panjal Pass (11,400 ft.) to Poshiana. Mist and rain on flat and grassy summit. Nearly lose a pony at river crossing. Preceding party lost one.

9th August. Reach Baramgalla after numerous river crossings, a few being awkward because rivers in flood. Seven extra men taken to minimise difficulties of fords.

10th August. Across Ratan Pir Pass (8,200 ft.) to Thanna Mandi. Heavy rain.

11th August. Reach Rajaori. Smooth deep ford—good place for swim. Probably easiest ford of all under normal conditions (3 villagers drowned on preceding day below ford).

12th August. Double march to rest-house near Naoshera. Thunderstorm. Guide unwell. Remain with him one day, and when quite recovered send him back to Srinagar.

14th August. Double march to Bhimber across the Aditak Hills.

15th August. Start about 3.30 A.M. and make easy double march to Kharian, but unable to catch E. bound express and lose a day.

19th August. Darjeeling.

22nd August. Leave for visit to Kangchenjunga district.

26th August. Gangtok.

30th August. Chungthang.

31st August. Arrive at Lachen.

2nd September. Leave Lachen.

7th September. Reach Green Lake, 8 miles N.E. of Kangchenjunga.

8th September. 1st attempt on Simvu (22,300 ft.) with 2 European guides.¹ Forced to turn back at 19,000 ft. Snowstorm.

10th September. 2nd attempt on Simvu with guides. Snow considered dangerous at about 20,700 ft. (Note.—The first estimate was about 21,000 ft., which was made on the assumption that the N. tops showed the highest summit. This is not the case. The highest peak lies to the S. It was not seen during this tour.)

12th September. Attempt on Nepal Gap with guides. Mist and snow. Turn back at 18,000 ft.

13th September. Start for Lhonak.

14th September. Cross Tangchung La.

15th September. Cross Thé La.

16th to 20th September. Peregrinations in Lhonak.

21st September. Recross Thé La.

22nd September. Snowstorm. Remain near Tumrachen Chu.

¹ 'Swiss guides were taken, but they proved unsatisfactory' (*Geog. Journal*, Sept. 1912).

23rd September. Cross the old Tangchung La (2 miles W. of new pass) and reach Green Lake. Fresh snow on mts.

25th September. Ascend hill above Green Lake (about 17,000 ft.).

27th September. Attempt Nepal Gap, but forced to turn at 19,000 ft. by crevasses.

30th September. 3rd attempt on Simvu with guides. Start about 2 A.M. and cross the Zemu glacier by moonlight. Snow found to be deep and soft at 20,000 ft. Weather turned bad.

9th October. Darjeeling.

April 10, 1919.

DEAR CAPTAIN FARRAR,—I send herewith the promised itinerary of what I term my first Himalayan Expedition, as the visit to India in 1907 was merely a tour. I don't think I need add much to the summary. When I arrived at Darjeeling, I found that Mr. Righi (the hotel manager) was to start for his month's holiday at the end of the week, and, hoping that he would do some climbing, I waited a couple of days for him. Mr. Righi, however, proved somewhat easily affected by altitude; he was a pleasant companion, and a good walker, but his participation in the Kangchenjunga Expedition of 1905 had not improved his adaptability to altitude.

You will see from the itinerary that there were many failures, but also a few successes, and I learnt a great deal regarding Himalayan snow conditions. It must be noted, however, that we were greatly handicapped, because I was carrying out scientific experiments when possible.

The incident which pleased me best of all was the ascent of the Langbu Peak (22,800 ft.),² which was my first completed Himalayan ascent, and as I managed to finish it after both the coolies with me had refused to move at 21,900 ft., it gives me a slight satisfaction even now. There was no real difficulty because the snow was in excellent order on the final peak, although deep and troublesome below.

Mr. Hinks on Monday last suggested that I might write to you regarding a contemplated attempt on Kamet (25,447 ft.), about which I believe Dr. Freshfield informed you in the end of the year, but, for various reasons, it may be better to defer until next week.

Yours sincerely,
A. M. KELLAS.

² Langpo Peak (Freshfield's *Round Kangchenjunga*).

EXPEDITION TO N. SIKHIM 1909.

2nd August. Darjeeling.

7th August. Leave Darjeeling with Mr. Righi and 62 coolies.

14th August. Chungthang.

19th August. Cross Donkia La (18,131 ft.).

20th August. Move up to high camp on Pawhunri (19,000 ft.).

21st August. Mr. Righi, being indisposed, make attempt on Pawhunri with 2 coolies. Reach 21,700 ft., but driven back by snowstorm. Snow very deep and powdery.

22nd August. Camp at Tso Lhamo.

24th August. Reach Tangu (12,300 ft.).

27th August. Cross Lungnak La (17,300 ft.) to Pokri. 10 yaks and 12 coolies.

30th August. Camp at end of Lhonak Glacier.

31st August. Move up to high camp under Jongsong La (18,500 ft.).

1st September. Return to low camp on right of Lhonak Glacier.

2nd September. Mr. Righi returns to Darjeeling.

4th September. Camp on summit of Jongsong La (20,300 ft.).

5th September. Camp at Confluence of S. Jongsong and S. Langbu Glaciers (19,000 ft.) approx.

6th September. Explore S. Langbu Glacier.

7th September. Descend to Kangchenjunga Glacier.

8th September. Camp near Pangperma.

9th September. Cross Kangchenjunga Glacier to examine W. face of Kangchenjunga.

11th September. Back to S. Langbu Glacier.

13th September. Attempt Langbu Pk., and reach Langbu Saddle at 21,000 ft., but driven back by snowstorm.

14th September. Ascend to Langbu Gap (20,000 ft.), between Langbu Pk. and Hoongkoong (Pyramid).

15th September. Ascend Langbu Peak (22,800 ft.),—last 900 ft. with one coolie.

17th September. Recrossed Jongsong La to camp at end of Lhonak Glacier.

19th September. Started for W. Arête of Jongsong Pk. Ascend to head of Lhonak Gl. and cross.

21st September. Ascend to Col at 21,500 ft. (approx.)

22nd September. Ascend ridge to over 22,000 ft. Dense mist. Stormy.

23rd September. Descend W. side of Lhonak Gl. to near Chorten Nima La Cirque.

24th September. Ascend to near Chorten Nima La. Stormy.

25th September. Camp at bottom of Thé La.

26th September. Cross Thé La (16,750 ft.) and cross near Tangchung La (camp, 15,600 ft.)

27th September. Cross Tangchung La (16,300 ft.) and ascend Zemu Gl. until opposite Little Siniolchum.

28th September. Ascend Tent Pk. glacier, and camp opposite affluent from Nepal Gap.

29th September. Attempt Nepal Gap. Reach 20,000 ft., but driven back by a snowstorm, which forced a rapid retreat to Green Lake.

30th September. Snowed all night of 29th, and all day of 30th.

1st October. Snow over 2 ft. deep, and still snowing steadily. (Coolies, who should have come up on preceding day from Lachen with provisions had turned back.) Rapid retreat to end of Zemu Glacier. Snow diminished in depth after 6 miles.

2nd October. Camp at confluence of Lonach Chu and Zemu.

3rd October. Thango.

6th October. Giagong.

7th October. Tso Lhamo.

8th October. Camp on Pawhunri (19,300 ft.).

9th October. Ascend Pawhunri to 23,000 ft. Forced to retreat after sunset by deep snow and high wind. Reach camp after dark.

10th October. Recross Donkia La and reach Moma Samdung (double march).

11th October. Lachung (double march).

12th October. Chungthang.

18th October. Darjeeling.

MAPS OF THE ALPS OF NEW ZEALAND.

IN acknowledging the maps which, as stated in 'A.J.' xxxiv. 295 *seq.*, had been presented to the Club by the Surveyor-General of New Zealand, I wrote to Mr. Harper :

'Many thanks for your letters of January 16 and 26. The maps have since arrived, and I enclose a formal letter of thanks to the Surveyor-General. . . .

‘Of, course, I know we can always rely upon your goodwill in all matters concerning the Club.

‘I am printing in full in the next JOURNAL the whole of your notes, except the notes endorsed on the maps themselves, but I have drawn attention to these endorsements.

‘Of course, from a mountaineer’s point of view, the maps are rather primitive, and I was surprised to see how very much rough country you have, part of which is still unexplored.

‘I imagine that your Surveyor-General is very limited for funds, and that there is thus no prospect of working the available material up into better maps.

‘The Swiss, no doubt, helped greatly by their magnificent mountain maps to build up their tourist business, but, of course, they had the whole of Europe as customers, so that the expense was justified. They, no doubt, hold the palm for map-making over every nation in the world. . . .’

I have now received the following interesting explanation.

J. P. F.

‘DEAR FARRAR,—Your criticism of our maps is quite just, they are certainly “rather primitive from the mountaineer’s point of view,” but when you realise the facts you will, I think, admit that these maps are really very creditable to our Survey Department.

‘You express surprise at the extent of rough country we have, though the maps I sent you only show a small part of it. As a matter of fact, the sheets only take in the main chain. From the extreme S. up to Aspiring is a very large tract of exceptionally rough mountainous country running up to about 8000 ft., and for 3500 ft. covered with very dense forest. In the latitude covered by the sheets I sent, the rough country extends to the E. of the areas shown—this is open but very rugged country and just below the snow line, running up to about 6600 ft. N. of Harper’s Pass, again, the mountain areas, reaching 6000 ft., spread out still further, and are also heavily timbered, except the Karkouva Range, which reaches nearly 10,000 ft.; and though this is open country it is extraordinarily rough. Even in the North Island there are extensive areas of mountainous country touching 5000 ft., and, like the W. coast of the South Island, it is heavily timbered (except in a few localities). Much of this has now been cleared and settled, but much is still in its natural state. . . .’

‘In such circumstances you will see that the first triangulation over both Islands would fix the main features, this would be followed by reconnaissance surveys and explorations such as mine and Douglas’s, filling in the main courses of rivers and valleys, and thus getting a map of the country on a broad basis, leaving minor details to be filled in. Then as settlement advanced and properties are arranged, the traversing of boundary lines would fill in the minor details on those lines. Thus, in the ordinary course, outside

the settled districts the Government have not been able to devote much attention to topographical details, as there was little practical use in so doing.

'You refer to Swiss maps and tourist traffic, and you show that you realise our distance from populous centres; but you must also realise that we have *more than ample* fine scenery already opened up for our tourists, without going off the beaten tracks, therefore a closer survey of many localities would not help the ordinary tourist traffic. Maps of the localities favoured by tourists are quite good enough for 95 per cent. of those who come, and the best maps in the world of these or others equally attractive would not bring appreciably more visitors than we have now.

'What we do want, and the N.Z.A.C. is advocating this, is better facilities of travel and better exploitation of the tourist centres already open. As a matter of fact, to put it shortly, we have, out here, more than one Switzerland, and from our distance away only a very small number of travellers to show them to!

'As far as exploration is concerned there are some small areas in the South Island really unexplored; but these are not snow and ice country, parties are working in them, but they would not attract the alpine man very much. The main alpine districts, practically every glacier and river, had been traversed and explored by 1895, but minor topographical details had not, and still have not, been recorded on maps. We have much of this information in hand to record, as a result of voluntary work, and I am glad to say that Government is about to compile a new map of the central portion of the Alps to record these details and bring it up to date. I have been asked to help on this, and we shall get others as well. . . .

'Excuse this long screed, which I hope will justify in your mind our "somewhat primitive" alpine maps!

'Yours sincerely,

'ARTHUR P. HARPER.

'Wellington Club, Wellington, New Zealand,
May 22, 1922.'

AMERICAN MEMBERS OF THE ALPINE CLUB.

THE Third Dinner of the Association was held on May 6, 1922, at the Harvard Club in Boston, members present being: Messrs. Charles E. Fay, Freeman Allen, Allston Burr, J. Ellis Fisher, Howard Palmer, J. Duke Smith, and H. B. de Villiers-Schwab, with the guests: Messrs. Allen Carpe, Henry S. Hall, jun., Alonso R. Weed, George M. Weed, and George N. Whipple.

In the absence of Mr. William Williams, Prof. Charles E. Fay occupied the chair. The Chairman spoke a few words in memory of the late President of the Club, Lord Bryce, following which everyone rose for a moment in silent respect. The present officers

of the Association were unanimously re-elected, and the Secretary announced the election of Lt.-Col. W. W. Foster (Vancouver), Messrs. Howard Palmer, J. Duke Smith, H. O. Frind and Dr. W. Hunter Workman.

Mr. J. Ellis Fisher then showed slides dealing first with the Wellenkuppe-Obergabelhorn-Arbengrat traverse, and the Z'Mutt and Italian routes of the Matterhorn; then with numerous climbs amongst the Chamonix Aiguilles, including the Géant, Requin, Charmoz, Verte, and d'Argentière, the routes being described in interesting detail. In conclusion, some slides of several climbs around Lake Louise in the Canadian Rockies were shown.

The Secretary also showed slides from the Wildstrubel to the Sustenhorn, including the ascent of the Finsteraarhorn by the Agassizjoch from Schwarzegg, the traverse of the Balmhorn, ascent by the Wildelsigengrat, descent by the entire Gizzigrat, and an unsuccessful attempt on the Ochs from the Strahlegg Hut.

Informal discussion followed the lectures, and the Dinner broke up about 11.45 P.M.

H. B. DE VILLIERS-SCHWAB,
Hon. Sec.

ABBOT NICHOLAS ON THE ALPS.

By W. P. KER.

[Read before the Alpine Club, April 8, 1922.]

AN invitation to read a paper to the Alpine Club is too great an honour to be declined. It is also a great danger; many peaks, passes, and glaciers are less troublesome. But the subject I have taken is good enough, if the Icelandic Itinerary from Norway to Rome and Jerusalem be as Mr. Coolidge describes it, the first Swiss Guide-book. What it tells directly about the Alps is not very much; the whole thing is no more than ten pages. But it has its own character, and it is pleasant enough to follow the pilgrims' road, the path to Rome, over 'Mundiófjall,' the Fell of Mont Jou.

Nicholas was a monk of the order of St. Benedict; the first Abbot of the monastery founded at Thverá in the N. of Iceland in 1155. His travels were earlier: he came back to Iceland in 1154. He is described in the note at the end of his work: 'This road-book and guide to towns, with all the information it contains, is written on the report of Abbot Nicholas, a man of wisdom, well renowned, ready of wit, rich in learning, tried

in counsel, and true of speech.' The usual complimentary ecclesiastical style ; flowery, but good evidence all the same.

There are two principal ways from Norway to the Alps : the junction is at Mainz. One goes by way of Denmark to the Elbe, and so on through 'Saxland,' either on the western line by Minden and Paderborn, or more to the E., by Hanover and Hildesheim, to Mainz. Or you may sail to the Low Countries, and set out with staff and scrip from Deventer or Utrecht up the Rhine. From Mainz the road leads through Strasbourg and Basle, by Avenches, Aventicum (a great place till the sons of Lodbrok wrecked it) to Vevey or the Lake of St. Martin, Martinsvatn (so named from the church at Vevey). There by different roads come all the pilgrims from the N. to cross the Alps : French, Flemings, English, Saxons, Northmen. Now we get on to our proper business, the Alpine road-book.

One day from Vevey (Fivizuborg) to St. Maurice (Mauritiusborg). Two days from St. Maurice to the Spital of St. Bernard, up on the Fell. Petrs Kastali, 'Peter's Castle,' is mentioned ; not very clearly placed, but evidently Bourg Saint Pierre. Besides St. Bernard's, there is a Spital of St. Peter up on Mont Jou. This note is taken by historians as proving the early date of the Abbot's guide-book ; the hospice of St. Peter, which was below the Pass, on this side, was coming to be out of favour ; it must have been given up soon after ; its place was taken by the hospice of St. Bernard. 'Biarnardz spitali,' we are told, is named for the first time in history by this Icelandic traveller. He has not much to tell about the beauties or the horrors of the Pass ; he notes that on St. Olaf's Day (July 29) there is often snow on the rocks and ice on the water.

So he goes on ; down past Etroubles (Thrælathorp) to Augusta—a good city, he says, with the tomb of St. Ursus and a bishop's see. There is not very much, at first sight, in the earliest Alpine guide-book ; is there anything more to be got out of it, fairly ? We do not want here any moral reflexions on the distance of time between Abbot Nicholas and Napoleon's breakfast at Bourg Saint Pierre, or on the common ignorance and indifference of Nicholas and Napoleon with regard to the High Level Route, or the still higher problems offered between Valsorey and Panossière. But there is no doubt that Mons Jovis and the road over Mont Jou, the Great Saint Bernard, have many associations, and of these 'shadowy recollections' many spring from solid reality or at any rate positive fact. Poetry and fiction are

there in plenty, from the old French miracle play of Saint Bernard of Menthon to the party at the hospice in 'Little Dorrit.' In history it is positive fact that Romford in Essex touches on the great Saint Bernard. Nicholas crossed over some years before Henry II of England granted these lands in Essex to the Austin Canons of Saint Bernard. There they are still; though they belong, if I am not mistaken, to New College now, they are part of the history of the Alps.

There is a story of a Paisley man going up to the Gleniffer Braes and discovering there that the world is wonderful when you see the whole of it. ('Man! it's a wonderfu' place the world when ye see the hale o't!') This was also the experience of Satan from a higher point, and Milton seems to have understood what the man from Paisley meant:

'Satan from hence now on the lower stair
That scaled by steps of gold to Heaven-gate
Looks down with wonder at the sudden view
Of all this World at once. As when a scout
Through dark and desert ways with peril gone
All night, at last by break of cheerful dawn
Obtains the brow of some high-climbing hill
Which to his eye discovers unaware
The goodly prospect of some foreign land
First seen, or some renown'd metropolis
With glistening spires and pinnacles adorn'd
Which now the rising sun gilds with his beams.'

Suppose you take Aosta for the metropolis on which the scout looks down from the hill early in the morning. Why not? Of course there is always danger when you get into poetry on the Alps, danger of unnecessary and unjustifiable sentiment. This is the rotten branch of which we have to beware. But surely there is nothing fanciful or unsound in the opinion that the path to Rome, the great North Road over the Fells of Mont Jou, has a meaning different from that of other passes. It is nothing like as splendid as the Monte Moro when the face of Monte Rosa is clear. But it takes you to Rome. The view from the Grand Combin is different from anything else in the Alps because it takes in the little oblong domino shape of the Roman camp of Aosta. Many passes lead to the garden of the Empire, as Dante calls Italy, but here from the top of the garden-wall you look down and see the Emperor himself, Cæsar Augustus, in his works. His triumphal arch is too small at that distance; it would need Milton's 'aery micro-

scope' to bring it out (and also to read the name of Saint Anselm at the corner of his street); but the domino shape of Augusta Praetoria is unmistakable, and there is no sense in refusing to understand it.

I wish to call attention to the Grand Combin. The name of this great mountain is practically unknown, even to the cultured public. How many readers of *The Times* or *Answers* have ever heard of it? The name of Mont Blanc is known to millions for one who knows the name of the Combin. Yet Mont Blanc is off the main roads: it is round the corner from the metropolis Aosta, nor does it belong particularly to the Little Saint Bernard on the other most frequented line of travel.

The valley of Cogne, which keeps it well in view, is not the pilgrims' way. But the Grand Combin rises, you might say, from the streets, the back-gardens of Aosta: you look up from the bridge beyond the *porta praetoria* and the triumphal arch, and there you see one of the highest of the Alps at its full height, no foothills blocking it. It belongs to the town more closely even than the Becca di Nona, on the other side of the valley. Why is it never named?

The explanation is this: that if ever a traveller asked for its name he was told 'that is Mont Jou.' Most often he did not ask, but assumed as a matter of course that Mont Jou was the name. The name, as we all know, belongs to the Pass, just as Monte Moro is a pass and not a peak. On the other hand we know that the Mount of Mont Jou, the Fells of Mont Jou, was a name in the north—in France and England, as well as in Iceland—for the whole chain of the Alps. A short geographical tract, in the same MS. as Abbot Nicholas, describes Italy as 'that kingdom which lies S. of the mountain wall (fjallgarð, fell-garth) which men call Mundio.' In the same tract, 'Rhine is the name of a great river that runs down from Mundio northward between Saxony and France.' Nicholas describes the Montjou Fell as reaching from W. to E.: the western limit is not definitely explained, but the eastern is on the Venetian gulf. Mont Jou for Nicholas means the Alps from end to end. But between the original restricted meaning [Mont Jou = Great St. Bernard] and the wide general meaning [Mont Jou = Alps] there must have been, I conjecture, another very common application. The Grand Combin was what travellers had in their eyes and minds most usually when they said 'Mont Jou' going or returning by the Great St. Bernard. For the people who had been there, Mont Jou meant practically the Grand Combin. How could

it fail to do so? They came down to Aosta, they looked back to the mountains; they could not see the Pass of St. Bernard, because it is tucked away to the left; they saw the Combin; they said to themselves proudly and piously: 'That is what we came over; we have crossed the Alps; there it is, the Mont Jou of which we have heard so much in the North.' Or take it the other way: the pilgrim with his staff and scrip comes back to Aosta: he sees the road leading straight up, and the great face of the mountain at the end, above him. Again he does not remember that the road to the Pass bears away to the left; he follows with his eyes the line of the road, which is the line of Val d'Ollomont, to the top of the wall, and he says to himself: 'There is the Mont Jou—that is what I have to get over the day after to-morrow.'

So I maintain that between the accurate meaning, Mons Jovis, the Pass, and the common general use of Mont Jou for the whole of the Alps, there was this strictly inaccurate but very definite meaning in the minds of all travellers who went that way: when they called up the picture of Mont Jou, what they saw was the view from Aosta looking up to the Grand Combin. Which explains why the great mountain had for centuries no particular well-known name of its own, though it was more in view and nearer the main line of trade than Mont Blanc or Monte Rosa.

Is it not a comparatively new thing to be particular about mountain names? Let the map of the Coolin answer—Sgur Thormuid and Sgur Mhic Coinnich. There is an amusing instance of vague meaning, very like the old Mont Jou business in one of the best of Alpine books, King's 'Italian Valleys' (1858), where he speaks of his ascent of the Grivola, meaning really the Pousset, and describing, on the same page, the Pic de la Grivola as inaccessible.

Abbot Nicholas goes on down the valley, past Châtillon, though he does not name it, nor does he turn aside to give up Rome for St. Théodule. His next station is 'Martin's kamrar,' which is Pont St. Martin; he takes his *kamrar* from the narrowest part of the valley, below Bard, which is said to bear the name of *Camera*. Nicholas does not think of Gressoney; it is early yet for tourists. He goes on to Ivrea at the end, the entrance of the defile. To go further with him would take us too far away from the Alps; all the same there are some few things in the rest of his narrative that have a bearing on the mountains. For one thing, like all his countrymen, he thinks of the Alps as making a difference in

Europe between N. and S.: N. of the Fell, S. of the Fell, the phrases are used as in Norway, and perhaps the analogy with the Dovrefjeld, and the two halves of Norway, N. and S. of the Fell, had something to do with the Icelandic and Norwegian treatment of the Alps. It is not an invention of modern romantic and sentimental travellers to find traces of their native landscape in places abroad. Byron was not pretending or putting it on when he said that—

‘Lochnagar with Ida looked o’er Troy.’

Of course it can be carried too far: there is the extreme case of a Scottish mountaineer who was overheard at Zermatt speaking of ‘the Taynuilt top’ of Monte Rosa. Cruachan was in possession of his mind, such as it was. I do not wish to hear him speak of the Nordend or the Höchste Spitze of Cruachan. The Scotch are possibly more inclined than others to this extravagant way of thinking. There was a philosopher once from Tweedside who looked at the Oberland from Bern and said: ‘It reminds me very much of the Lowlands of Scotland.’ But the most curious and complicated example of this sort of conceit is exhibited by one of the finest of English poets in a ‘Hymn before Sunrise, in the Vale of Chamouny.’ I ask leave to show up the impostor Coleridge, and to convey to every poet here present a warning that crime, at its best, is likely to damage the noblest human faculties. I do not complain of S. T. Coleridge for taking what he could get from a German poem by a lady: the lady is none the worse. Nor for never having been near the Vale of Chamouny. Nor for saying in a prose heading, that ‘within a few paces of the Glaciers the *Gentiana Major* grows in immense numbers, with its “flowers of liveliest blue.”’ If people took this as meaning that the author had actually stood there and revelled in the blue of *Gentiana Major*, why should the author be blamed, and who is injured? My complaint goes deeper.

Coleridge had never seen Mont Blanc, had never been near the Alps, but he had the German lady’s poem to work on, and he knew what mountains were like. So far he is secure, and a line from this poem is quoted by Stevenson as the perfect rendering of mountains in poetry:

‘And visited all night by troops of stars.’

This one knows at once is *true*. But the line preceding is as false as it can be:

‘O struggling with the Darkness all the night.’

A mountain struggling with the darkness!—who ever saw it? The strange thing is that it contradicts and vilifies the absolute truth of the following line: what sensible person, let alone the stars, would visit a struggler?

The explanation is this: Coleridge's mountain was Scafell, and he wrote at first—

'O blacker than the darkness all the night'

which is at any rate not grossly untrue. But when he started on his Hymn before Sunrise with Glaciers, Gentians and all the local colour he could borrow from the German lady, and the appropriate religious musings, he remembered that though Scafell might be blacker than the darkness, this would not do for the Vale of Chamouny and the mountain which *ex hypothesi* was white. So he altered the line, put himself hopelessly in the wrong, and did all he could to spoil the line that we remember, the line that by itself is enough to remember, out of Coleridge's Alpine Hymn.

Abbot Nicholas, before we leave him, must be allowed to be a sentimental traveller, after his own quaint fashion. His particular vanity is one that he shares with many kindreds and tongues—making familiar names out of foreign sounds, like Plug Street from Ploegstert. Perhaps he was only repeating what had been done by relays of Icelandic or Norwegian pilgrims before him. His name for Venice, at any rate, is to this day the established Icelandic name—*Feneyjar*, the Fen Isles—a great success in popular etymology. The word for 'island'—our familiar *ey* in Ramsey, Bardsey, and so on, comes in as an excellent substitute for Latin endings in—*ia*. Ivrea turns into Ioforey, Prince's Island. So the English at York using the same word as the Icelanders at Eporedia [*eofo* = a wild boar, or a chieftain, as the case may be] made the unintelligible Eboracum into Eoforwic. A day's journey from Ivrea is Vercelli: Nicholas calls it Friðsæla, Peacefulness. His 'Pilgrim's Progress' is full of significant names, and he travels through an allegory. At Vercelli, we may remember (just to show how the world is held together), an English traveller left a valuable book of Anglo-Saxon poetry, among other things the full text of the poem of the Rood, part of which had been found written in runes on the Ruthwell Cross before the Vercelli Book was discovered. Pavia, Papija, turns into Papey—the name given by the Norwegians everywhere to islands with Irish hermits settled on them—a common name off the British coasts, Papa, Pabba, Pabay, with a ruined chapel, off Broadford Bay in Skye. It

does not do as well on the Ticino. Nicholas at Salerno calls it Salerniborg, where the best physicians are: *salerni* is old Norwegian for the house of office: Nicholas seems for a moment to be ranged with Molière and other satirical critics of the Faculty of Medicine.

His journey, I should say, is diversified with allusions to northern mythology, not only with notes on halidoms, saints, and their shrines. He passes the place where Sigurd slew Fafnir the dragon, and in the Lunigiana he says some people tell that there Gunnar was put in the serpent's den. At Luna he notes also that the Northern meet the Western pilgrims coming from Spain and 'James land' [Jacobsland], that is, from Santiago in Galicia.

These old itineraries were much in favour in the North. There is a strange story about one of them which is not quite irrelevant here. The best known description of the Holy Places in Jerusalem was written by Bede: he got his particulars from Adamnan Abbot of Iona: Adamnan got them from Arculf, a Frankish bishop who was shipwrecked on Iona, along with his note-book. The itineraries and descriptions made good reading for people who were accustomed to travel. The Icelanders and Norwegians were generally able to carry maps in their heads. The Icelandic sagas are composed for people who know their country and most of the ways about it. They read tracts like the Abbot's guide because they wished to see the whole world. This taste of theirs lasted for generations: the chief MS. of Nicholas was written in 1387, more than two centuries after.

When I agreed to write a paper, I called on the President for help. I said that I had not enough to make much of an Alpine story; that I had no pictures; that I wanted to see some more of his pictures of Skye. The President is an austere man, of a scientific habit of mind: he asked how the transition was to be worked, to the W. of Scotland from an Icelandic report on the Great St. Bernard. It is not difficult. The Norwegian geographical essay from which I have quoted—it comes just before Abbot Nicholas in the MS.—gives the boundaries of Norway: North, Gandvik (the White Sea); South, Gautelfr, the river at Gothenburg; East, the forest between Norway and Vermaland; West, Aungulseyjar Sund, *i.e.* the Sound of Anglesey, the Menai Straits. Norway includes, on this reckoning, Shetland, the Orkneys, Sodor and Man—all the Western Islands, Kintyre along with them: Anglesey is the last; beyond the Sound is Wales.

These northern geographers are good at bringing things together : their maps bend round. They connect the N. coast of Europe with Greenland ; and the tract from which I quote, in a very interesting passage on Wineland the Good, mentions an opinion held by some that Wineland is part of Africa—not unlike the old theory of the Straits of Magellan, which made Tierra del Fuego part of a southern continent. They were led too far, no doubt, but a tendency to see the whole world together is no disgrace to a traveller.

Homer knew the speed of the mind, how it springs away when the man says, '*There* would I be, and *there* !' and thinks of many places where he is not. If Homer put this idea into the *Iliad* there is probably not much wrong with it: it will do for a text, at the end of this sermon.

NOTE.—The Itinerary has been twice edited : in 1821 and 1908. The latest editor, Dr. Kálund, author of the great Topography of Iceland, translated it into Danish and wrote a commentary on it in '*Aarb. for nordisk Oldkyndighed*,' 1913 ; Nicholas used to be described as Abbot of Thingeyri ; but the learned are now agreed on Thverá as his proper house.

THE SECOND MT. EVEREST EXPEDITION.

By G. LEIGH MALLORY.

[Read before the Joint Meeting of the A.C. and the R.G.S.,
October 16, 1922.]

WHEN first the prospect of going to Mt. Everest opened for me I used to visualise the expedition in my thoughts as a series of tremendous panting efforts up the final slopes. Later it became a symbol of adventure ; I imagined, not so much doing anything of my own will, but rather being led by stupendous circumstances into strange and wonderful situations. Now it has become a problem, with no less interest, and even excitement, the expedition brings to my mind's eye a view of the long mountain slopes set at intervals with groups of little tents, with loads of stores and sleeping sacks, and with men. My object at present is to state this problem—partly because without it the story of our attempts can't well be understood, and partly because

the problem is still with us. Everest is not yet climbed. Nor do we know for certain that it can be climbed. But we may see how much nearer we are to a solution as a result of this year's expedition.

The first element in this problem is to supply a camp one stage below the North Col. The reconnaissance of last year had made it plain that this could be done, but it seemed not unlikely with too great a strain; the difficulty is in bringing the porters fresh to this point. General Bruce has proved that this can be done, at all events with his guidance, and we were able to set out this year from our camp at 21,000 ft. with full confidence that our porters were in the best of strength and spirits.

The problem of climbing the mountain from that point to the summit, from 21,000 to 29,000 ft., was left after last year's expedition briefly thus;—a way to the North Col at 23,000 ft. had been found in September, but it was by no means certain that this way would prove convenient, or even serve at all in May and June before the monsoon. Upwards from the North Col it was fairly certain that no great obstacle would present itself below the final ridge, and it seemed probable that the true N.-E. ridge to the summit, if it could be reached, would not be insuperable. Our experience in 1921 had also pointed to the period before the monsoon as offering the best chances of favourable weather. In such conditions as prevailed after the monsoon last year it was at all events certain that Mt. Everest could not be climbed. Supposing, then, that all the conditions of the mountain should turn out for the best, what were the chances of success? It was known that men could climb to a height of 24,600 ft.—the Duke of Abruzzi's record. It was certain, therefore, that they could exist a great deal higher, for the difference between breathing at rest and breathing with the effort of climbing up is immense. My own experience led me to believe that it would be possible to climb at least to 26,000 ft., and probably in one day, from the North Col. But the ultimate limit would be determined, not by a man's capacity when starting fresh on a single day, but when starting on the last of several days after using up his reserves of strength by successive efforts above 21,000 ft.; for the reserves are not made good by a night's rest at these great heights. There remained the problem of providing camps to allow the climbers to reach this theoretical limit, or the summit of Mt. Everest if the limit were lower than that. It seemed likely that the limit

in practice would be determined, not by the endurance of the climbers, but by the capacity of the porters to carry loads above 23,000 ft., and by the organisation of transport within their powers.

Considering this year's expedition with reference to this problem, the climbing party was first concerned with the way up to the North Col. It was obvious to all of us, when we reached the Base Camp and could study the conditions of the mountain, that many of the slopes were icy, even on the N. face. Strutt's party returning to the Base Camp on May 8 gave a gloomy account in that respect. The almost level glacier was remarkably icy up to 20,500 ft. Somervell and I, when we went from the Base Camp on May 10, with orders to act independently and get as high as we could, fully expected prolonged step-cutting up to the North Col. On May 13 we set forth from Camp 3 with one coolie. Of the slopes which Bullock and I had used in our ascent to the North Col last year, all except the final and steepest one were glittering ice. But we saw that by cutting up a short, steep slope at the bottom we could reach a gently-sloping corridor, and so reach that final slope which was the key to the ascent. Choosing this way we found good snow almost continuously above the first ice. Thus we avoided, not only for that occasion but for the whole of the prolonged assault, a great labour and a great danger. It is essential to have a way up to the North Col where the coolies can very largely look after themselves, and, as it was, the labour of getting up on that first occasion proved quite sufficient.

On the North Col a quite unexpected difficulty arose. The final slope I spoke of gives out on to a wide snow-shelf. Above it is an ice-cliff, broken occasionally by deep fissures. Last year we had easily found a way round this obstacle in the direction of Mt. Everest, and so reached the lowest point of the Col. Somervell and I now found this way barred by an impassable crevasse. We stood at the edge of it for a little while, wondering whether it could really be true that we had come so far to be baulked by a crevasse, and debating the use of a ladder. Then we went back and explored in the direction of the North Peak. We found a steep way up at the further end of the ice-cliff, and after leaping two large crevasses proceeded along the hummocky and broken ground beyond; at length we saw a clear way to the level snow from which the N. ridge springs. But it does not follow that a party of the future will be so fortunate. One might well be

cut off altogether in such a place, which evidently changes a good deal from year to year, and in a country where wood is difficult to obtain another expedition would do well to equip itself against this contingency.

On May 13, then, we had taken the first step towards establishing Camp 4. The one porter had carried up one tent. Nothing more could be done until more porters were available. Fortunately the transport arrangements below were now working so satisfactorily that on the 15th Strutt, Morshead, and Norton were able to join us at Camp 3, and we were able to keep eight coolies from their convoy.

We had now to decide how best under these circumstances to tackle the problem, and principally whether we should attempt to make two camps or only one above Camp 4 at the North Col. The question, when we came to examine it in detail, was practically decided for us; with only nine, or possibly ten, coolies immediately available, the operation of providing a No. 6 camp, involving nearly double the labour of providing only Nos. 4 and 5, would take too long, besides in all probability demanding too much of the porters. As it was we had a margin of strength—an invaluable margin. The plan allowed two coolies for each of four loads from Camp 4 to Camp 5, and it was hoped that by this arrangement they would be able to reach 26,000 ft. The ten more loads were carried to Camp 4, under the North Col, on May 17.

On the 19th we left camp at 8.45 A.M., carrying up bedding and all warm things available for the porters. The day was fine and sunny. At 1 P.M. Norton and I were putting up tents, while Morshead and Somervell were fixing one more rope between the terrace of our camp and that of the col itself. These domesticities occupied the afternoon, and when sundown came at 4.30 we turned in for the night, all well and fairly comfortable, proudly possessing six thermos flasks.

Prospects seemed extraordinarily promising. It was our intention to carry on in the morning only four loads—two of the smallest tents, two double sleeping-sacks, food for one and a half days, cooking pots, and two thermos flasks. Our nine porters, who were housed three apiece in Mummery tents, were perfectly fit, so that we had two porters for each load, even so having a margin of one porter. Everything had been managed so happily and satisfactorily that there was hardly a doubt that the men would be able to establish camp higher up the mountain on the morrow.

On May 20 sunlight hit the tents at 5 A.M. according to

our time. I immediately got up to rouse the party. There was no sign of life in the porters' tents, which were hermetically sealed. Muffled responses from the interior carried no conviction of minds alert and eager. It was necessary to untie the elaborate fastenings by which the flaps were secured. The porters, I found, were all unwell—we eventually ascertained that four of them were seriously mountain-sick. Five were willing to come on. It was hardly surprising that they felt better when they were persuaded to come out of the unventilated tents.

Further delays were caused by the cooking operations. It was easy to make tea with the water from our thermos flasks, but we had decided to start the day with a handsome dish of spaghetti. Unfortunately the two tins provided for that purpose, instead of being gently nursed the night long near the warmth of human bodies, had been left out in the cold snow, and edible spaghetti was eventually produced only after prolonged thawing.

We started in the end an hour late, at 7 A.M., quickly making our way to the North Col, whence a broad snow-ridge ascends at a gently increasing angle. It was clear that sooner or later steps would have to be chipped in the hard surface. We were able to avoid this labour at first by following the stone ridge on the W. side.

Morshead, if good cheer be a sign of fitness, seemed the strongest and went first; we proceeded at a satisfactory pace in the fine early morning. Perhaps, after all, we should camp at the required height of 26,000 ft.

'Illusory hope of early sun begot!' We presently became aware that it was not a perfect day: the sun had no real warmth, and a cold breeze sprang up from the west. I found myself kicking my toes against the rocks for warmth whenever we paused, and was obliged to put on my spare warm clothes—a Shetland woollie and a silk shirt. The porters were evidently feeling the cold more acutely the higher they went. The ridge of stones ended abruptly, and it became clear that if we were to establish a camp at all, we must race for shelter to the E. side of the ridge. Cutting steps at high altitudes is always hard work. The proper way to do it in hard snow is to give one blow with the ice-axe and then stamp the foot into the hole just made; but such a blow requires a man's full strength, and he must kick hard into the hole. On the higher Himalayas the amateur will probably prefer to make two or three chips of a feebleness sort

in cutting his steps. In any case, 300 ft. of such work, particularly if hurried, is extremely exhausting, and we were glad to rest at length about noon, sheltered under rocks at about 25,000 ft.

There was no question now of getting our loads much higher before camping. The porters would have to return to camp ; it would have been an unwarrantable risk to expose them further in such conditions ; they must be sent down before they were frost-bitten and before the weather could change for the worse. Under other conditions it might have been necessary for some of us to accompany them on their way down ; now they could safely be sent alone. No camping-place could be seen where we were, so we crossed round to the sheltered side, vaguely hoping that one might present itself. Eventually the porters with Somervell professed to have found the right place, and on the steep mountain side they proceeded to build a wall of stones so as to construct a comparatively flat place for one of the Mummery tents.

Norton and I, feebly imitating their efforts, proceeded to erect another, but somehow in our case the walls did not serve. One site after another proved a failure, until at last we found a steep slab of rock, which was at all events in itself secure, and so placed that it was possible to make up the ground at its lower end. Here we ultimately pitched our tent in such a way that the slab took up half the floor-space. A more uncomfortable arrangement could not have been devised, as the inevitable result was that one man slid down on to the other as they lay, squeezing them tightly together, and so increasing almost to the pitch of agony the pain caused by the sharp rocks forming the other part of the floor.

There, however, were the two little tents, perched fifty yards apart, in some sort of fashion for security under the lee of rocks, containing each a double sleeping-bag for warmth in the night. Somervell melted snow with much labour for a perfunctory meal, and soon each bag harboured a pair of men, tightly packed, warming each other, and warmed by the prospect full of hope of a day's mountaineering unlike all others, because we were to start from a point on the earth's surface higher than any before reached.

Perhaps none of us yet realised how much we had already suffered from the cold. Norton's ear was thrice its normal size, and proved a considerable inconvenience by limiting the number of admissible dispositions for his limbs and mine in those close quarters. Three of my fingers were frost-touched ; but



Photo, J. Noel.

THE NORTH COL FROM CAMP 3.

(X = Track of Avalanche of June 7).

luckily the effects of frostbite are not very serious in the early stages. Far more serious was Morshead's condition. Too late in the day he had put on his sledging suit for protection against the wind ; on arriving in camp he was chilled and evidently unwell. We had also to regret the loss of Norton's rucksack ; it slipped from his knees during a halt, and must now lie somewhere at the head of the Rongbuk Glacier with its provision of warm things for the night ; however, we still had enough among us.

Our chief anxiety was the weather ; the west wind dropped in the evening, and the signs pointed to a change. At intervals during the night we noticed that stars were visible ; nearer dawn we were disgusted to observe that the ground outside was snow-white. A little later, listening, we heard fine hail falling on the tents, and peering out of the tent door it was possible to make out that the cloud and mist were coming up from the east on a monsoon current.

At 6.30 A.M., with somewhat better signs, we extricated ourselves from our sleeping-bags and set about preparing a meal. Only one thermos flask had turned up overnight, so that our task was cold and long. Another ill-fated rucksack containing provisions slipped from our perch, but miraculously, after bounding a hundred feet or more, stopped on a small ledge. Morshead, heroically exerting himself, recovered it.

At about 8 o'clock we were ready to start. We did not discuss whether under these conditions we ought to proceed. The snow which had fallen was obviously an impediment, and more was to be expected. But weather of this sort, with all its disadvantages to the mountaineer, may not mean mischief. In high altitudes the snow falls fine, and is not hard driven by the wind. So far as getting up was concerned, there was therefore little fear on this count. None of us, after a long, headachy night, felt at our best. For my part, I hoped that the mere effort at deep breathing in the first few steps of the ascent would string me up to the required efforts, and that we all should be better once we had started.

Disappointment followed at the moment of setting out in hearing bad news from Morshead :

'I think I won't come with you,' he said ; 'I am quite sure I should only keep you back.'

On such a question only the man concerned is able to judge. We three [Mallory, Somervell, and Norton] went on regretfully without him.

Details of the climbing of the next few hours do not merit exact description. The conditions were naturally unfavourable: fresh snow covered the ledges and concealed loose stones, everywhere obstructive; but the general nature of the ground was not difficult. Despite the geological conjectures of last year, we did not find ourselves climbing chimneys and flakes. There was no sign of granite as we stepped up from ledge to ledge; and these ledges were uniformly tilted disadvantageously.

Plainly the rock is of a stratified sedimentary form, and as far as can be seen it must have the same general nature up to the summit, varied only by recognizable bands of lighter-coloured quartzite. It was a disappointment that the angle of the ledge was not sufficiently steep to require a more strenuous use of the arms, for the arms help one up, seeming to relieve the monotony of balanced footwork.

It was a matter of slowly pushing up, first regaining the ridge by striking westwards, then following the ridge itself directly towards the great tower capping the N.E. shoulder of the mountain. Ultimately, the power of pushing up depended upon lung capacity. Lungs governed our speed, making the pace a miserable crawl. From the Alpine point of view our lungs made us pause to admire the view oftener than is correct in the best circles. But our lungs were remarkably alike and went well together. Personally I contrived a looseness of the muscles by making an easy, deep-drawn breath, and by exercising deep breathing I found myself able to proceed. For a long time we had good hope of reaching the N.E. shoulder, but, remembering the long descent to be made and the retarding circumstances of fresh snow, we agreed to turn back not much later than 2 p.m.

We had to consider Morshead left behind at Camp 5. On his account it was desirable to get back to camp with time in hand to reach the North Col on the same day; and in any case it would be an insane risk to climb to the utmost limit of one's strength on Mt. Everest and trust to inspiration or brandy to get one down in safety; for the body does not recover strength in the descent as it does in the Alps.

At 2.15, some time after crossing the head of a conspicuous couloir on the N.E. face, we reached, as it were, the head of the rocks, still perhaps 500 ft. below the N.E. shoulder of the mountain, and commanding a clear view to the summit. The pace of the party was extremely slow, and there was obvious risk in spending much more time in going up. Greatly as we

desired to gain the shoulder—and we were not yet at the end of our powers—the only wisdom was in retreat. The aneroid registered 26,800 ft. We turned to descend with sufficient strength, we believed, for the long task before us.

Away to the westward the ground appeared to be less rocky, and to have more snow. Our obvious plan was to make use of any snow-slope in that direction for our descent. We were, however, very quickly disillusioned, as the 'snow-slopes' turned out to be a series of slabs of rock lying treacherously under a fresh white mask of snow. We were obliged to get back to our ridge and follow down along our upward tracks. At 4 o'clock Morshead welcomed us back to our camp of the previous night at 25,000 ft. After gathering what we wanted and leaving our tents, sleeping-sacks, and other items, we proceeded back along the ledge which our track of yesterday had followed. It was difficult to realise immediately how the freshly-fallen snow had made of this easy ground a dangerous passage. A nasty slip occurred, and three men were held only by the rope secured round the leader's single ice-axe. The party proceeded very cautiously after this incident, and it soon became evident that it would be a race with the on-coming darkness.

When we regained the great snow-ridge, no traces of the steps we had cut on the upward journey could be found; we had to repeat the step-cutting. That grim and slow process was observed at about 6 o'clock by Strutt from below in Camp 3. Nor were our difficulties at an end after the passage of this slope. One of the disagreeable facts which differentiates Himalayan expeditions from those in lower mountains is that an exhausted man does not recover his strength quickly as he goes down. Morshead, although climbing very pluckily and making the most tremendous efforts to get his breath, had now arrived at the end of his tether. At best he could only proceed a few steps at a time. Fortunately, it was easy going on the way down to the North Col as we watched the diminishing light. Norton supported Morshead with his shoulder while I was finding the easiest way down, and Somervell acted as rear-guard. Lightning from blue-grey sinister clouds to the west began to flicker after sunset over one of the most amazing mountain views and one which seemed to be full of malice. What sort of wind were we going to find on the Col after dark when our difficulties were due to begin once more?

Our luck was good, or Providence was kind, for, as soon as we had arrived at the starlit crevasses now dimly confronting

us and Somervell had produced the lantern from his ruck-sack, so calm was the air that even with a Japanese match, after a dozen trials or so, we lit our candle. By its light we groped hither and thither to find our way; there were crevasses concealed beneath the trackless surfaces; happily no one fell through before we reached the edge of a little cliff. Here it was necessary to jump down about 15 ft. into snow, a sufficiently alarming prospect with so dim a light to guide one; but the leap was safely accomplished. One of the fixed ropes, if only we could find it, would now take us down to the terrace where the five tents could just be seen still neatly pitched in a row awaiting our arrival. The rope had become buried by snow and our last candle burnt out. We groped for some time along the edge of the precipice and then began to go down at a steep angle, doubting whether this were the way. Suddenly someone hooked up the rope from under the snow. We knew then that we could reach the tents.

A little later, at 11.30, we were searching our camp for fuel and cooking-pots. None were found. A meal without liquid food was not to be contemplated; but the North Col, unless snow could be melted, was 'dry.' The best 'ersatz,' invented by Norton, was a mixture of jam and snow with frozen condensed milk. The sickly stuff was most unlike a drink, and I ascribe to its influence the uncontrollable shudderings, spasms of muscular contraction in belly and back which I suffered in my sleeping-bag, and which caused me to sit up and inhale again great whiffs from the night air, as though that habit of deep breathing had settled upon me indispensably.

On the following morning, urged still by our unrelieved cravings, we set off at 6 A.M. I suppose a fresh man with tracks to help him might comfortably reach Camp 3 in an hour from the North Col. It took us six hours, and we worked hard; we had to make a staircase beneath the new snow good enough for porters' use, for we did not intend to sleep at 21,000 ft. without our sleeping-bags. And it is worth remarking that the circumstance of new snow and covered tracks must always be a serious consideration to a tired party on Chang La.

In the light of these experiences we may review afresh the problem of climbing Mt. Everest. By far the most important modification of our previous view is in respect of the porters. Their power was far greater than was to be expected. None before had ever carried a camp above 23,500 ft.; these men carried our loads to 25,000; Finch's even higher to 25,500 ft.,

and some of them even repeated this amazing feat on three successive days. Nor is there the smallest reason to suppose that after sleeping a night above 25,000 ft. they would be incapable of going on next day. They showed astonishingly little signs of fatigue. The mountain-sickness to which some of them succumbed on the North Col was easily accounted for by the fact that they closed their tent doors and slept with too little air; nothing of the kind occurred again. The fact that the porters were capable of so much and endured so well has profoundly altered the aspect of our problem. It seems that almost certainly a sixth camp, at about 27,000 ft., might be carried up; and the limit of climbing, instead of being determined by the difficulty of fixing camps, will be determined simply by the factor of endurance among the trained climbers.

And what, after this year's performances, may be expected of them? It will have been observed that the three of us who reached 26,800 ft.¹ climbed only 1,800 ft. in a day from our camp; but the maximum time was not available; bad weather delayed our start, and the descent was to a camp below our starting-point. So far as time is concerned we should have had five hours more, and judging by the party's performance up to their highest point, I haven't the smallest doubt that with five hours more 700 ft. might have been added to the record, and the day's performance brought to 2,500 ft. The question, then, which I should put is this: Is it conceivable, in the first place, that in two days above the North Col a camp could be fixed at 27,000 ft.? and, in the second, supposing a party to start from 27,000 ft., could they conceivably climb in a day the remaining 2,000 ft. to the summit? We cannot, of course, give a certain answer; but at all events the question does not appear fantastic. The effort of climbing the last 2,000 ft. to the summit should not in itself be considerably greater than that of climbing the 2,000 ft. from 25,000 to 27,000; for the difference in atmospheric pressure is very small, only $\cdot 8$ of an inch between 27,000 ft. to the summit, compared with a difference of $19\frac{1}{2}$ ins. between sea-level and 27,000 ft. The factors which will tell against the climber on this last section are his efforts on the

¹ Since writing this we have the figures worked out by Morshead from theodolite observations at the Base Camp; according to them we reached 26,985; but we cannot deduce from this the exact rise on the final day, since Camp 5 is unfixed by theodolite.

previous days, from which it may be supposed he will not have recovered completely, and, possibly, ill effects from sleeping at these very high camps. But if any gambler has been laying odds on the mountain, he should very considerably reduce his ratio as a result of this year's expedition.

I imagine that a number of physiologists, especially, would be inclined to reduce these odds on the mountain. I was told at Oxford last year, by Sir Walter Raleigh, that the physiologists said it was physiologically impossible to climb to the top of Mt. Everest without oxygen—the matter had been proved by experiments in a pressure-reducing chamber. I told Sir Walter that the physiologists might explode themselves in their diabolical chamber, but we would do what we could to explode their damnable heresy—or words to that effect. I always, as a matter of course, take off my hat to scientists, as latter-day Olympians breathing a different if not purer air than common mortals. But the air of Mt. Olympus (a base little lump after all) is not that of Mt. Everest, and experiments made there with a pumped-out tank, interesting as they may be, are of no value in determining where precisely on that other hill of unrivalled altitude persevering man will be brought to a standstill; for it must be supposed of the persevering man that he has been acclimatised to rarefied air, while the Olympian and other victims of those experiments are only acclimatised to the atmosphere of Mt. Olympus, which, I am given to understand, is particularly dense. Acclimatisation—this is the factor at the root of the matter. The best experiment in this respect is to go to Mt. Everest, or some other high mountain, and see how you feel; the scientists may explain your feelings, but when it comes to prophecy they have less right to be heard than a high-climbing mountaineer; the idea of the man who has tried as to how much higher he might go should be of incomparably more value than any conclusion proceeding merely from a laboratory. The best opinion on this question must surely be that of Somervell (may he forgive me for bringing his name into this controversial matter), who, besides climbing to 26,985 ft. (accepting the theodolite figure as against the aneroid) without the aid of oxygen, has a trained knowledge of physiology. I think he will not disagree with any remarks of mine on this subject.

We have considered so far only the problem of climbing Mt. Everest without oxygen. To climb the mountain with oxygen is a separate problem; here Finch is the authority,

and it is not my province to discuss the details. It will be remembered that Somervell and I when we went up for the third attempt this year intended to use oxygen; judging from what had been said by Finch, Bruce, and others too who had used oxygen up to the North Col, we imagined we should go further with than without it. It was this possibility that decided us during that long day of June 4 while we lay in the sangar at Camp 1, watching the clouds and the snow, to push up again—to be repelled finally by some danger that we ought not to face or to be conquered by the difficulties. The problem of climbing Mt. Everest with the aid of oxygen seemed not so very far beyond our powers, provided the fair opportunity, when we thought of what had been done already. Perhaps the most significant fact was this—that three of us, after climbing to a height only about 2000 ft. below the summit, had felt no special distress.

Two other considerations must engage our attention, because they affect the problem of climbing Mt. Everest, the dangers involved, and the weather. This year's expedition has emphasised the dangers. It has tragically pointed to the danger of an avalanche on the way up to the North Col—how grievous an accident it was can only be known to those who had tested those seven brave men, had contact with their gay indomitable spirits, seen their unflagging good-humour, received tokens of their constant will to help, of their unflinching, faithful hearts. An impartial judge may say that in the last analysis the accident was due to imperfect knowledge of snow in this part of the Himalayas; and, with the comment that one never can know enough about snow, I should bow to that judgment. The lesson at all events will not be forgotten, and one may suppose that another party will not be caught in the same way.

About the other dangers it is necessary to say more because they must vitally affect the organisation of any attempt to climb the mountain. Everyone will remember how Morshead's collapse compromised our plan of descent. There is, of course, no question of his determination; his companions have nothing but sympathy for him and praise for his splendid pluck. The causes of this collapse are obscure; his heart was not affected; possibly it was due to want of liquid food. At starting from the North Col Morshead seemed fitter than anyone; his failure was a complete surprise to all of us; and in view of it I think a party of the future should reckon that some such experience may happen to any one of them.

At a high altitude even the strongest might suffer this loss of muscular power; and *he will not recover up there*. The danger in such a case can hardly be over-estimated; all calculations of time will be upset, and the awful fate of a night out, perhaps above 27,000 ft., will be hanging over the party. The only valid precaution against such an event is to have another party in reserve at the camp from which the first climbers have started.

Another danger, to which I referred last year, concerns the porters. It must be remembered that, though active men, they are not trained mountaineers. In favourable conditions they would probably climb down, say, from 26,000 ft. without disaster. Even so, this practice is not to be commended; they are apt to straggle, and have no idea of looking after one another. And they are averse to using a rope. But on the crevassed North Col the rope must be used for safety; and conditions are not always favourable. As a general rule provision should be made to escort the porters, even when tracks are available. And this, again, points to a much larger personnel, capable of effective action at least up to 25,000 ft.

It may further be said, though it must be obvious to any mountaineer, that at high altitudes one climbs much nearer the margin of strength. There is singularly little reserve for an emergency, though I'm glad to say there was enough for emergencies in the case of the climb I have described. It is not too much to assert that all dangers through faults in climbing are immensely greater on Mt. Everest than, for instance, on Mt. Blanc or the Matterhorn.

Again, the sum of all these dangers is increased to an extent that cannot be over-emphasised by unfavourable weather. A party with one man *hors de combat*, a party who have passed that indefinite line beyond which mere weakness becomes a danger, a party of porters with no tracks to guide them and no compass lore, or finding fresh snow on the steep slope below the North Col: men in such circumstances are in gravest peril when the wind blows on Mt. Everest. It is when we view our problem as a whole, in the light of the weather experienced this year, that we should be least inclined to optimism. Apart from any consideration of the monsoon's date, and that of 1922 was admittedly early, the conditions before it came were not encouraging. The weather had a bad habit; it presented us with a dilemma; either we might have a taste of the monsoon and the threat of snow in the air—it will be remembered that snow fell while we were

encamped at 25,000 ft.—or we should have that bitter enemy, the N.W. wind, the wind that drove us to camp a thousand feet lower than we intended, the wind that Finch and Bruce will not forget for its howling during the first night at their high camp.

Perhaps it is not impossible for men to reach the summit of Mt. Everest, in spite of wind and weather; but unless the weather can mend the habit we observed this year, or grant a long respite, their chances of reaching it and getting down in safety are all too small. Man may calculate how to solve his problem, and . . . you may finish the sentence.

THE SECOND ATTEMPT ON MT. EVEREST.

By GEORGE I. FINCH.

[Read before the Joint Meeting of the A.C. and the R.G.S.,
October 16, 1922.]

THE climbing of Everest is a tremendous proposition. With a clear realisation of this, I joined the Expedition, ready to do my share in the conquest of the mountain by every means at our disposal. Optimism may be the attribute of fools; but they say that experience teaches even such, and my experience of Alpine climbing had already taught me that no stiff mountaineering problem can be tackled with much hope of success unless one believes wholeheartedly in the possibility of achievement. I think it was Sir Francis Younghusband who, somewhere or other, referred to the necessity of possessing the faith that removes mountains, and a purpose unhoneycombed with half-heartedness. With such an example in our minds throughout that long and, at times, rather trying journey across Tibet, where it was, perhaps, hard to keep one's optimism always unsullied, it was not impossible for one to cling to the watchword 'Everest is climbable, and we shall climb it.' Confidence alone were of little avail; but allied with enthusiasm and respect for the work in hand it engenders that concentration of mind and energy which acts like a searchlight upon the problem and seeks solutions for the complicated questions of equipment, tactics and so forth involved.

A little over a year ago I had considered, somewhat carelessly and superficially I fear, the advantages of using oxygen

as an aid to climbing Mt. Everest, and had dismissed the idea on the grounds that the weight of any useful supply would be prohibitive. Professor Dreyer, however, the professor of pathology at the University of Oxford, held the strong opinion that Everest would never be climbed without oxygen and that an ample supply could be provided in a sufficiently portable form to enable the summit to be reached. The question was examined by the Everest committee with an open mind, with the result that his opinion was endorsed and it was decided to include oxygen in the equipment of the Expedition. The oxygen equipment, consisting of very light steel cylinders for storing the oxygen and an ingenious apparatus for distributing it to the climber, was evolved by Major Stewart and Mr. Eager of the Air Ministry and Mr. Unna, in close co-operation with Mr. Davis and Mr. Rosling of the firm of Siebe Gorman & Co. It was somewhat complicated, but frequent oxygen drill parades were taken very seriously by all members of the party.

There are those who do not believe in oxygen. Perhaps it is because simple, obvious facts render them uneasy in their unbelief that they rush into print with a wholesale condemnation on the grounds that its use in high mountaineering is what they rather loosely term 'artificial' and, therefore, unsporting. Now, few of us, I think, who stop to ponder for a brief second, will deny that our very existence in this enlightened twentieth century with all its amenities of modern civilisation is, in the same slipshod sense of the word, 'artificial.' Most of us have learnt to respect progress and to appreciate the meaning and advantages of adaptability. For instance, it is a fairly firmly established fact that warmth is necessary to life. The mountaineer, acting on this knowledge, conserves as far as possible his animal heat by wearing specially warm clothing. No one demurs; it is the commonsense thing to do. He pours his hot tea from a thermos bottle—and never blushes! Nonchalantly, without fear of adverse criticism, he doctors up his insides with special heat- and energy-giving foods and stimulants! From the sun's ultra-violet rays and the wind's bitter cold, he boldly dares to protect his eyes with Crookes' anti-glare glasses; further, he wears boots that to the average layman look ridiculous! The use of caffeine to supply just a little more buck to an almost worn-out human frame is not cavilled at despite its being a synthetic drug the manufacture of which involves the employment of complicated plant and methods. If science could prepare

oxygen in tabloid form or supply it to us in thermos flasks that we might imbibe it like our hot tea, the stigma of 'artificiality' would, perhaps, be effectually removed. But when it has to be carried in special containers, its whole essence is held to be altered and, by using it, the mountaineer is taking a sneaking, unfair advantage of the mountain! In answer to this grave charge, I would remind the accuser that, by the inhalation of a little life-giving gas, the climber does not smooth away the rough rocks of the mountain or still the storm; nor is he an Aladdin who, by a rub on a magic ring, is wafted by invisible agents to his goal. Oxygen renders available more of his store of energy and so hastens his steps, but it does not, alas! fit the wings of Mercury on his feet. The logic of the anti-oxygenist is surely faulty.

I have seen the opinion expressed—presumably by way of supporting the idea of attempting to climb Mt. Everest inadequately equipped, *i.e.*, without oxygen—that it is just as important to ascertain how far a man can climb without oxygen as to reach the top by what are called 'illegitimate' means. It may be important, but it was not the object which the Expedition had to attain.

General Bruce had brought us safely, both mentally and physically, through Tibet to the Base camp. Put baldly thus, it may sound a small accomplishment; actually, the task was one demanding the highest qualities of generalship and powers of organisation. When we left him at the Base camp, his great fund of energy and cheerful good wishes for success continued to encourage us.

On May 20, Geoffrey Bruce and I arrived at Camp 3. We were accompanied by Tejbir, one of the four Gurkha non-commissioned officers on the Expedition and as fine a type of Gurkha humanity as one could wish to see. The cylinders containing our oxygen were found to be in good condition; but the apparatus—through no fault of the makers, who had, indeed, done their work admirably—leaked very badly, and to get them into satisfactory working order, four days of hard toil with soldering iron, hacksaw, pliers and all the other paraphernalia of a fitter's shop were necessary. Our workshop was in the open. The temperature played up and down round about 0° F., but inclined more to the zero side of that irrational scale. Even handling bits of metal in the bitter cold, often with bare hands on account of the delicate nature of some of the repairs, did not prevent Geoffrey Bruce from helping me with that energy, great will and good nature that

he showed so abundantly throughout the whole of our climb together. The masks from which the oxygen was to be breathed proved useless, but by tackling the problem with a little thought and much cheerfulness a satisfactory substitute was eventually evolved. Preparatory to embarking on the climb itself, we went for several trial walks—one over to the Ra-Piu La, a pass, 21,000 ft. high, at the foot of the N.E. ridge of Everest, from where we hoped to obtain views of the country to the S. But only part of the N.E. ridge showed hazily through drifting mists. Towards the N. and looking down the East Rongbuk glacier, views were clearer though partially obscured by rolling banks of cloud. Colonel Strutt and Dr. Wakefield, unoxygenated, accompanied us on this little expedition, and oxygen at once proved its value, so easily did Bruce and I outpace them. On our return to Camp 3, the delicate white mists floating in the sky above the North Col seemed to beckon to us to climb these snowy slopes and see what lay hid in the back of beyond. So two mornings later we started off for the North Col on another trial trip. In the afternoon we returned to Camp 3. There had been a considerable amount of step-cutting, for fresh snow had fallen, compelling us to deviate from the usual route; but even so oxygen had made a brief Alpine ascent¹ of what is otherwise a strenuous day's work.

On May 24, Captain Noel, Tejbir, Geoffrey Bruce and I, all using oxygen, went up to the North Col (23,000 ft.). Bent on a determined attack, we camped there for the night. Next morning broke fine and clear though somewhat windy, and at 8 o'clock we sent off up the long snow slopes leading towards the N.E. shoulder of Everest twelve porters carrying oxygen cylinders, provisions for one day and camping gear. An hour and a half later, Bruce, Tejbir and I followed and, in spite of the fact that each bore a load of over 30 lbs., which was much more than the average weight carried by the porters, we overtook them at a height of about 24,500 ft. They greeted our arrival with their usual cheery, broad grins. But no longer did they regard oxygen as a foolish man's whim; one and all appreciated the advantages of what they naively chose to call 'English air.' Leaving them to follow, we went on, hoping to pitch our camp somewhere above 26,000 ft. But shortly after 1 o'clock the wind freshened up rather offensively and it began to snow. Our altitude was 25,500 ft., some

¹ 3 hrs. up, 50 mins. down, 36 photographs taken *en route*.

500 ft. below where we had hoped to camp, but we looked round immediately for a suitable camping site as the porters had to return to the North Col that day and persistence in proceeding further would have run them unjustifiably into danger. This I would under no circumstances do, for I felt responsible for these cheerful, smiling, willing men who looked up to their leader and placed in him the complete trust of little children. As it was, the margin of safety secured by pitching camp where we did instead of at a higher elevation was none too wide; for before the last porter had departed downwards the weather had become very threatening. A cheerful spot in which to find space to pitch a tent it was not; but though I climbed a couple of hundred feet or so further up the ridge, nothing more suitable was to be found. Remembering that a wind is felt more severely on the windward side of a ridge than on the crest, a possible position to the W. of the ridge was negatived in favour of one on the very backbone. The leeside was bare of any possible camping place within reasonable distance. Our porters arrived at 2 P.M., and at once all began to level off the little platform where the tent was soon pitched, on the very edge of the tremendous precipices falling away to the East Rongbuk and Main Rongbuk glaciers, over 4000 ft. below. Within twenty minutes the porters were scurrying back down the broken, rocky ridge towards the snow slopes leading to the North Col, singing, as they went, snatches of their native hillside ditties. What splendid men! Having seen the last man safely off, I looked to the security of the guy ropes holding down the tent and then joined Bruce and Tejbir inside. It was snowing hard. Tiny, minute spicules driven by the wind penetrated everywhere. It was bitterly cold, so we crawled into our sleeping bags, and, gathering round us all available clothing, huddled up together as snugly as was possible. With the help of solidified spirit we melted snow and cooked a warm meal, which imparted some small measure of comfort to our chilled bodies. A really hot drink was not procurable, for the simple reason that at such an altitude water boils at so low a temperature that one can immerse the hand in it without fear of being scalded. Over a *post-prandium* cigarette, Bruce and I discussed our prospects of success. Knowing that no man can put forward his best effort unless his confidence is an established fact, the trend of my contribution to the conversation was chiefly 'Of course, we shall get to the top.' After sunset, the storm rose to a gale, a term

I use deliberately. Terrific gusts tore at our tent with such ferocity that the ground sheet with its human burden was frequently lifted up off the ground. On these occasions our combined efforts were needed to keep the tent down and prevent its being blown away. Although we had blocked up the few very small openings in the tent to the best of our powers, long before midnight we were all thickly covered in a fine frozen spindrift that somehow or other was blown in upon us, insinuating its way into sleeping bags and clothing, there to cause acute discomfort. Sleep was out of the question. We dared not relax our vigilance, for ever and again all our strength was needed to hold the tent down and to keep the flaps of the door, stripped of their fastenings by a gust that had caught us unawares, from being torn open. We fought for our lives, realising that once the wind got our little shelter into its ruthless grip it must inevitably be hurled with us inside it down on to the East Rongbuk glacier, thousands of feet below.

And what of my companions in the tent? To me who had certainly passed his novitiate in the hardships of mountaineering, the situation was more than alarming. About Tejbir I had no concern; he placed complete confidence in his sahibs and the ready grin never left his face. But it was Bruce's first experience of mountaineering, and how the ordeal would affect him I did not know. I might have spared myself all anxiety. Throughout the whole adventure he bore himself in a manner that would have done credit to the finest of veteran mountaineers, and returned my confidence with a cheerfulness that rang too true to be counterfeit. By 1 o'clock on the morning of the 26th the gale reached its maximum. The wild flapping of the canvas made a noise like that of machine-gun fire. So deafening was it that we could scarcely hear each other speak. Later, there came interludes of comparative lull, succeeded by bursts of storm more furious than ever. During such lulls we took it in turn to go outside to tighten up slackened guy ropes, and also succeeded in tying down the tent more firmly with our Alpine rope. It was impossible to work in the open for more than three or four minutes at a stretch, so profound was the exhaustion induced by this brief exposure to the fierce, cold wind. But with the Alpine rope taking some of the strain we enjoyed a sense of security which, though probably only illusory, allowed us all a few sorely needed moments of rest.

Dawn broke, bleak and chill; the snow had ceased to fall,

but the wind continued with unabated violence. Once more we had to take it in turns to venture without and tighten up guy ropes, and to try to build on the windward side of the tent a small wall of stones as an additional protection. The extreme exhaustion and the chill produced in the body as a result of each of these little excursions were sufficient to indicate that, until the gale had spent itself, there could be no hope of either advance or retreat. As the weary morning hours dragged on, we believed we could detect a slackening off in the storm. And I was thankful, for I was beginning quietly to wonder how much longer human beings could stand the strain. We prepared another meal. The dancing flames of the spirit stove caused me anxiety bordering on anguish lest the tent, a frail shelter between life and death, should catch fire. At noon, the storm once more regained its strength and rose to unsurpassed fury. A great hole was cut by a stone in one side of the tent and our situation thus unexpectedly became more desperate than ever. But Tejbir still smiled, and Bruce's cheerfulness was not found wanting; so we carried on, making the best of our predicament until, at 1 o'clock, the wind dropped suddenly from a blustering gale to nothing more than a stiff breeze. Now was the opportunity for retreat to the safety of the North Col camp. But I wanted to hang on and try our climb on the following day. Very cautiously and tentatively I broached my wish to Bruce, fearful lest the trying experience of the last twenty-four hours had undermined his keenness for further adventure. Once again might I have spared myself all anxiety. He jumped at the idea, and when our new plans were communicated to Tejbir, the only effect upon him was to broaden his already expansive grin.

It was a merry little party that gathered round to a scanty evening meal cooked with the last of our fuel. The meal was meagre for the simple reason that we had catered for only one day's short rations, and we were now very much on starvation diet. We had hardly settled down for another night when, about 6 P.M., voices were heard outside. Our unexpected visitors were porters who, anxious as to our safety, had left the North Col that afternoon when the storm subsided. With them they brought thermos flasks of hot beef-tea and tea provided by the thoughtful Noel. Having accepted these most gratefully, we sent the porters back without loss of time.

That night began critically. We were exhausted by our

previous experiences and through lack of sufficient food. Tejbir's grin had lost some of its expanse. On the face of Geoffrey Bruce, courageously cheerful as ever, was a strained, drawn expression that I did not like. Provoked, perhaps, by my labours outside the tent, a dead, numbing cold was creeping up my limbs—a thing I had only once before felt and to the seriousness of which I was fully alive. Something had to be done. Like an inspiration came the thought of trying the effect of oxygen. We hauled an apparatus and cylinders into the tent, and, giving it the air of a joke, we took doses all round. Tejbir took his medicine reluctantly, but with relief I saw his face brighten up. The effect on Bruce was visible in his rapid change of expression. A few minutes after the first deep breath, I felt the tingling sensation of returning life and warmth to my limbs. We connected up the apparatus in such a way that we could breathe a small quantity of oxygen throughout the night. The result was marvellous. We slept well and warmly. Whenever the tube delivering the gas fell out of Bruce's mouth as he slept, I could see him stir uneasily in the eerie, greenish light of the moon as it filtered through the canvas. Then half unconsciously replacing the tube, he would fall once more into a peaceful slumber.

Before daybreak we were up, feeling fresh and fit though terribly hungry. We proceeded to make ready for our climb. Putting on our boots was a struggle. Mine I had taken to bed with me, and a quarter of an hour's striving and tugging sufficed to get them on. But Bruce's and Tejbir's were frozen solid, and it took them the best part of an hour to mould them into shape by holding them over lighted candles. Shortly after 6, we assembled outside. Some little delay was incurred in arranging the rope and our loads, but at length at 6.30 A.M., soon after the first rays of the sun struck the tent, we shouldered our bundles and set off. What with cameras, thermos bottles and oxygen apparatus, Bruce and I each carried well over 40 lbs.; Tejbir with two extra cylinders of oxygen shouldered a burden of about 50 lbs. Our scheme of attack was to take Tejbir with us as far as the N.E. shoulder, there to relieve him of his load and send him back. The weather was clear. The only clouds seemed so far off as to presage no evil, and the breeze, though intensely cold, was bearable. But it soon freshened up, and before we had gone more than a few hundred feet the cold began to have its effect on Tejbir's sturdy constitution, and he showed signs of

wavering. Bruce's eloquent flow of Gurumuki, however, managed to boost him up to an altitude of 26,000 ft. There he collapsed entirely, sinking face downwards on to the rocks and crushing beneath him the delicate instruments of his oxygen apparatus. I stormed at him for thus maltreating it, while Bruce exhorted him for the honour of his regiment to struggle on; but it was all in vain. Tejbir had done his best; and he has every right to be proud of the fact that he has climbed to a far greater height than any other native. We pulled him off his apparatus and, relieving him of some cylinders, cheered him up sufficiently to start him with enough oxygen on his way back to the high camp, there to await our return. We had no compunction about letting him go alone, for the ground was easy and he could not lose his way, the tent being in full view below.

After seeing him safely off and making good progress, we loaded up Tejbir's cylinders, and, in view of the easy nature of the climbing, mutually agreed to dispense with the rope, and thus enable ourselves to proceed more rapidly. Climbing not very steep and quite easy rocks, and passing two almost level places affording ample room for some future high camp, we gained an altitude of 26,500 ft. By this time, however, the wind, which had been steadily rising, had acquired such force that I considered it necessary to leave the ridge and continue our ascent by traversing out across the great N. face of Everest, hoping by so doing to find more shelter from the icy blasts. It was not easy to come to this decision, because I saw that between us and the shoulder the climbing was all plain sailing and presented no outstanding difficulty. Leaving the ridge, we began to work out into the face. For the first few yards the going was sufficiently straightforward, but presently the general angle became much steeper, and our trials were accentuated by the fact that the stratification of the rocks was such that they shelved outward and downward, making the securing of adequate footholds difficult. We did not rope, however. I knew that the longer we remained unroped, the more time we should save—a consideration of vital importance. But as I led out over these steeply sloping, evilly smooth slabs, I carefully watched Bruce to see how he would tackle the formidable task with which he was confronted on this his first mountaineering expedition. He did his work splendidly and followed steadily and confidently, as if he were quite an old hand at the game. Sometimes the slabs gave place to snow—treacherous, powdery stuff, with a thin, hard, deceptive

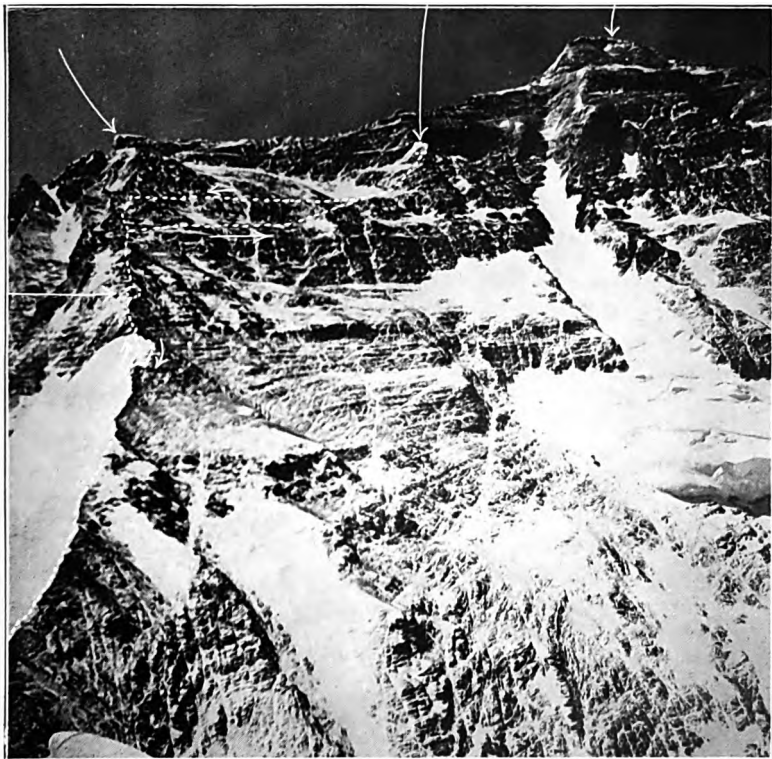
crust that gave the appearance of compactness. Little reliance could be placed upon it, and it had to be treated with great care. And sometimes we found ourselves crossing steep slopes of scree that yielded and shifted downwards with every tread. Very occasionally in the midst of our exacting work we were forced to indulge in a brief rest in order to replace an empty cylinder of oxygen by a full one. The empty ones were thrown away, and as each bumped its way over the precipice and the good steel clanged like a church bell at each impact, we laughed aloud at the thought that 'There goes another 5 lbs. off our backs.' Since leaving the ridge we had not made much height although we seemed to be getting so near our goal. Now and then we consulted the aneroid barometer, and its readings encouraged us on. 27,000 ft.; then we gave up traversing and began to climb diagonally upwards towards a point on the lofty N.E. ridge, midway between the shoulder and the summit. Soon afterwards an accident put Bruce's oxygen apparatus out of action. He was some twenty feet below me, but struggled gallantly upwards as I went to meet him, and, after connecting him on to my apparatus and so renewing his supply of oxygen, we soon traced the trouble and effected a satisfactory repair. The barometer here recorded a height of 27,300 ft. The highest mountain visible was Cho Uyo, which is just short of 27,000 ft. We were well above it and could look across it into the dense clouds beyond. The great West Peak of Everest, one of the most beautiful sights to be seen from down in the Rongbuk Valley, was hidden, but we knew that our standpoint was nearly two thousand feet above it. Everest itself was the only mountain top which we could see without turning our gaze downwards. We could look across into clouds which lay at some undefined distance behind the N.E. shoulder, a clear indication that we were only a little, if any, below its level. Pumori, an imposing ice-bound pyramid, 23,000 ft. high, I sought at first in vain. So far were we above it that it had sunk into an insignificant little ice-hump by the side of the Rongbuk glacier. Most of the other landmarks were blotted out by masses of ominous, yellow-hued clouds swept from the W. in the wake of an angry storm-wind. The point we reached is unmistakable even from afar. We were standing on a little rocky ledge, just inside an inverted V of snow, immediately below the great belt of reddish-yellow rock which cleaves its way almost horizontally through the otherwise greenish-black slabs of the mountain. Though 1700 ft. below, we were well within half a mile of the summit,

N.E. Shoulder

27,300

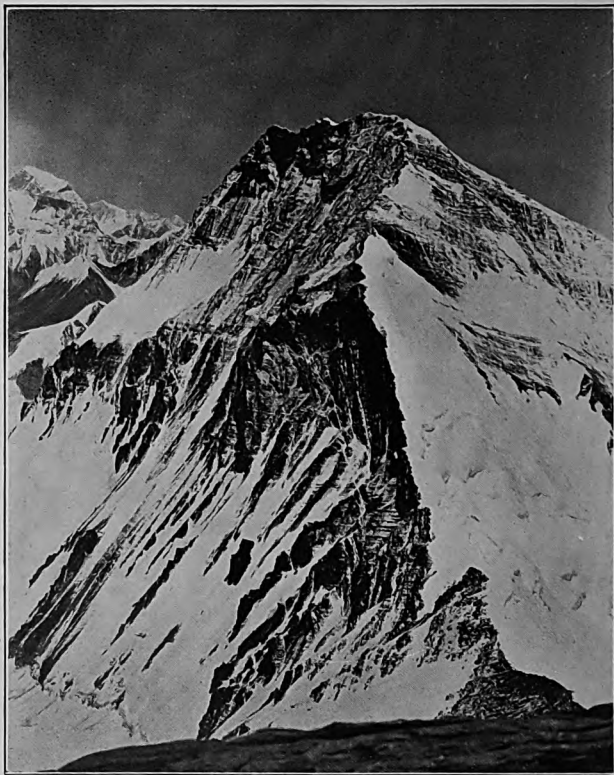
Summit

Camp
25,500



Photo, G. I. Finch.

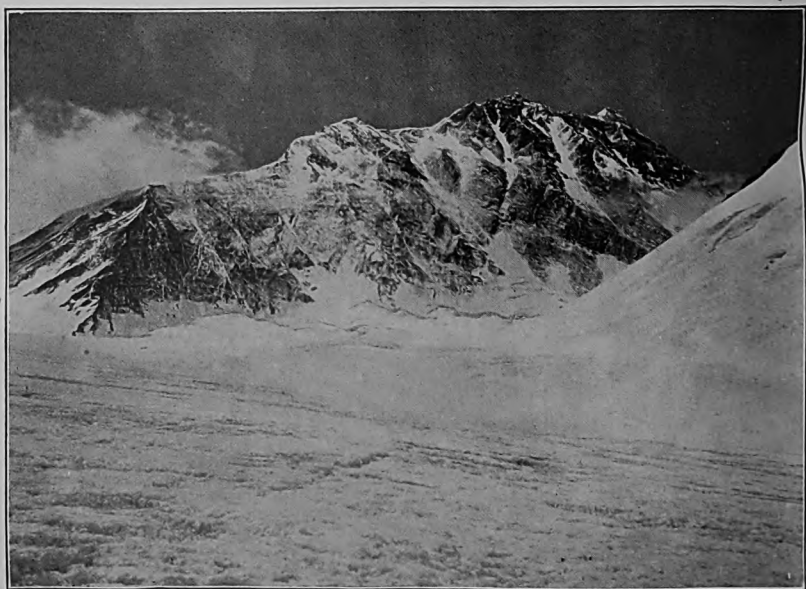
**NORTH FACE OF MT. EVEREST FROM THE NORTH COL.
Finch-Bruce route.**



Photo, G. I. Finch.

MT. EVEREST, N. PEAK.

From 24,200 ft. on N. face of Everest.



Photo, G. I. Finch.

MT. EVEREST FROM BELOW CAMP 3.

so close, indeed, that we could distinguish individual stones on a little patch of scree lying just underneath the highest point. Ours were truly the tortures of Tantalus: for, weak from hunger and exhausted by that nightmare struggle for life in our high camp, we were in no fit condition to proceed. Indeed, I knew that if we were to persist in climbing on, even if only for another 500 ft., we should not both get back alive. The decision to retreat once taken, no time was lost, and, fearing lest another accidental interruption in the oxygen supply might lead to a slip on the part of either of us, we roped together. It was midday. At first we returned in our tracks, but later found better going by aiming to strike the ridge between the N.E. shoulder and the North Col at a point above where we had left it in the morning. Progress was more rapid, though great caution was still necessary. Shortly after 2 P.M., we struck the ridge and there reduced our burdens to a minimum by dumping four oxygen cylinders. The place will be easily recognised by future explorers; those four cylinders are perched against a rock at the head of the one and only large snow-filled couloir running right up from the head of the East Rongbuk glacier to the ridge. The clear weather was gone. We plunged down the easy, broken rocks through thick mists driven past us from the W. by a violent wind. For one small mercy we were thankful—no snow fell. We reached our high camp in barely half an hour, and such are the vagaries of Everest's moods that in this short time the wind had practically dropped. Tejbir lay snugly wrapped up in all three sleeping-bags, sleeping the deep sleep of exhaustion. Hearing the voices of the porters on their way up to bring down our kit, we woke him up, telling him to await their arrival and to go down with them. Bruce and I then proceeded on our way, met the ascending porters and passed on, greatly cheered by their bright welcomes and encouraging smiles. But the long descent, coming as it did on the top of a hard day's work, soon began to find out our weakness. We were deplorably tired, and could no longer move ahead with our accustomed vigour. Knees did not always bend and unbend as required. At times they gave way altogether and forced us, staggering, to sit down. But eventually we reached the broken snows of the North Col, and arrived in camp there at 4 P.M. A craving for food, to the lack of which our weakness was mainly due, was all that animated us. Hot tea and a tin of spaghetti were soon forthcoming, and even this little nourishment refreshed us and renewed our strength to such an extent that three-quarters of an hour later

we were ready to set off for Camp 3. An invaluable addition to our little party was Captain Noel, the indefatigable photographer of the Expedition, who had already spent four days and three nights on the North Col. He formed our rearguard and nursed us safely down the steep snow and ice slopes on to the almost level basin of the glacier below. Before 5.30 P.M., only forty minutes after leaving the Col, we reached Camp 3. Since midday, from our highest point we had descended over 6000 ft. ; but we were quite finished.

That evening we dined well. Four whole quails truffled in *pâté de foie gras* followed by nine sausages left me asking for more. The last I remember of that long day was going to sleep, warm in the depths of our wonderful sleeping-bag, with the remains of a tin of toffee tucked away in the crook of my elbow.

Next morning showed that Bruce's feet were sorely frost-bitten. I had practically escaped ; but the cold had penetrated the half-inch thick soles of my boots and three pairs of heavy woollen socks, and four small patches of frostbite hampered me at first in my efforts to walk. Bruce was piled on to a sledge, and I journeyed with him as his fellow-passenger. Willing porters dragged us down until the surface of the glacier became so rough as to impose too great a strain on our slender conveyance with its double burden.

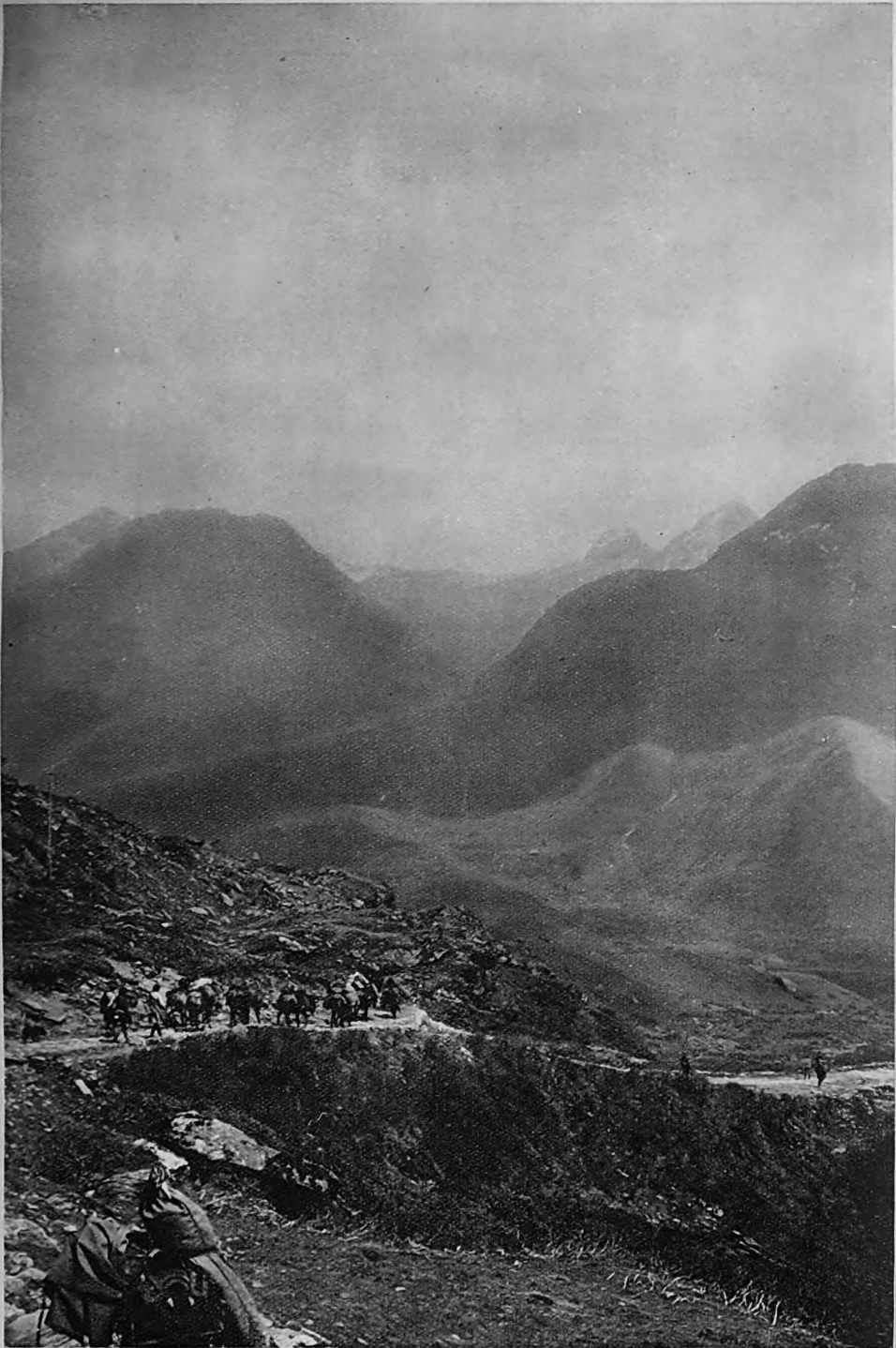
Our attack upon Mount Everest had failed. The great mountain with its formidable array of defensive weapons had won ; but if the body had suffered, the spirit was still whole. Reaching a point whence we obtained our last close view of the great unconquered Goddess Mother of the Snows, Geoffrey Bruce bade his somewhat irreverent adieux with 'Just you wait, old thing, you'll be for it soon !'—words that still are expressive of my own sentiments.

EVEREST EXPEDITION, 1922.

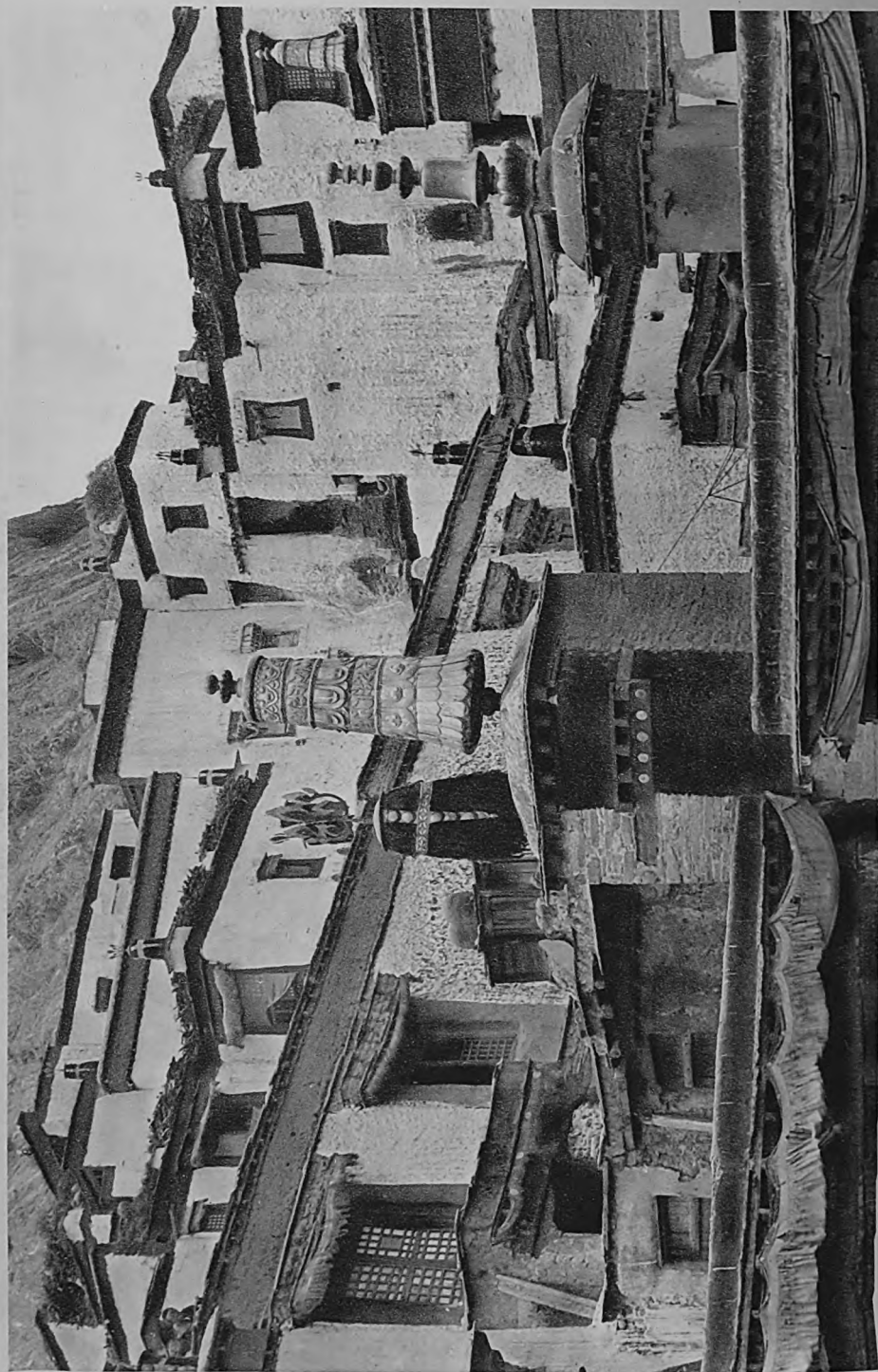
Notes on Illustrations 1 to 15.

[We are indebted to the R.G.S. for supplying these illustrations.]

Plate 3.—This photograph is taken from Pang La, a pass about 18,000 ft. high, which crosses the watershed between the Bhong Chu (Arun River) and Dzakar Chu. This pass lies



1. APPROACHING THE JELEP LA



2. SHEKAR MONASTERY FROM THE ROOF OF THE PRINCIPAL TEMPLE



3. MOUNT EVEREST AND THE CHOMO LUNGMA GROUP FROM THE PASS SOUTH OF SHEKAR BETWEEN THE VALLEYS





6. THE BASE CAMP, RONGBUK VALLEY



7. SERAC ON THE EAST RONGBUK GLACIER

Photo. by Dr. Longstaff



8. EAST RONGBUK GLACIER BETWEEN CAMPS II. AND III.

Chang La
Camp IV.

Changtse

Camp III.



9. HEAD OF THE EAST RONGBUK GLACIER AND THE CHANG LA

23180

NORTH
↓

22460

22740

EAST
↓

Khartaphu
23640

Rapiu La



Camp II.

10. THE EAST RONGBUK GLACIER FROM ABOVE CAMP II. (PANORAMA)

Changtse

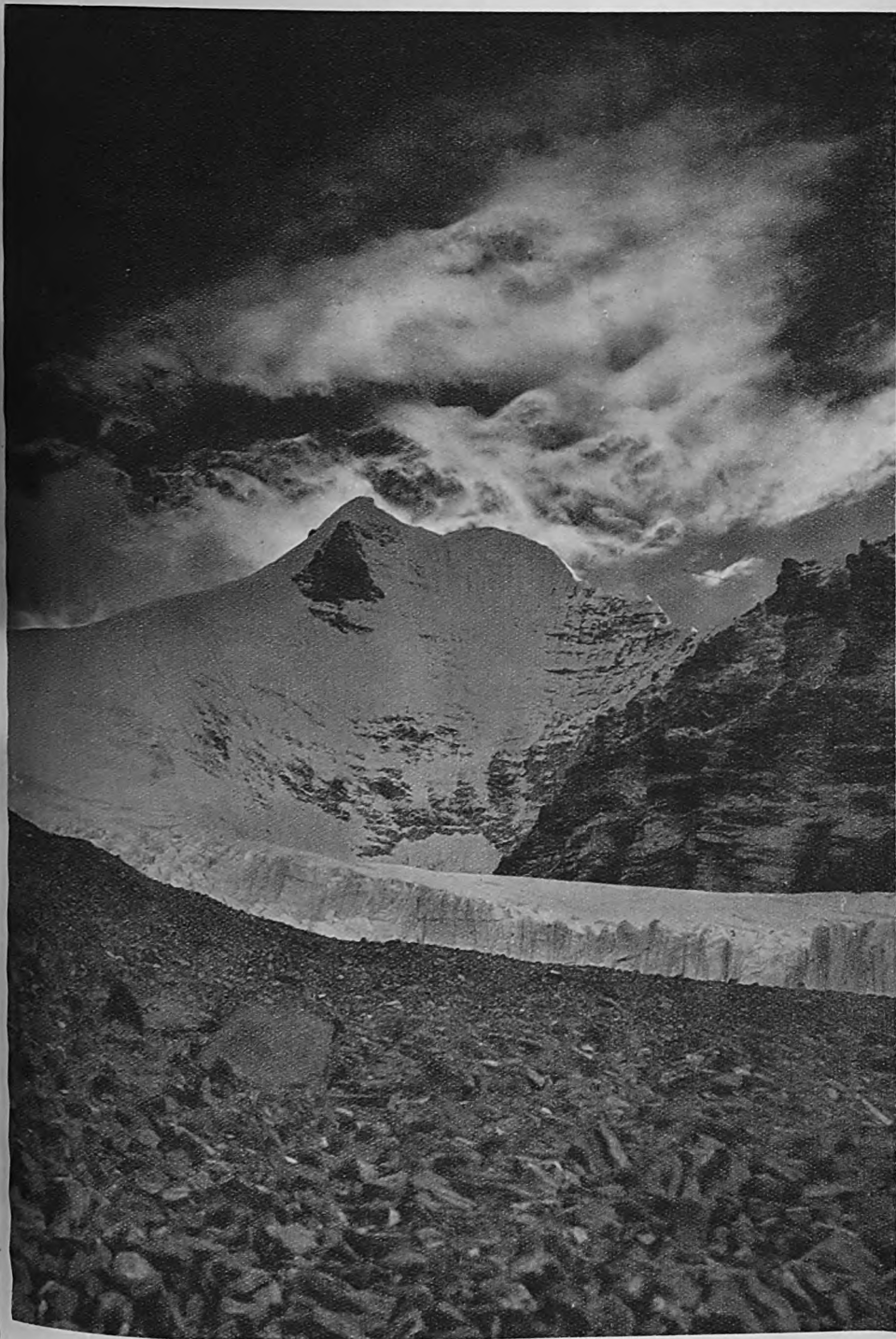
Khartaphu Lhakpa La

22850

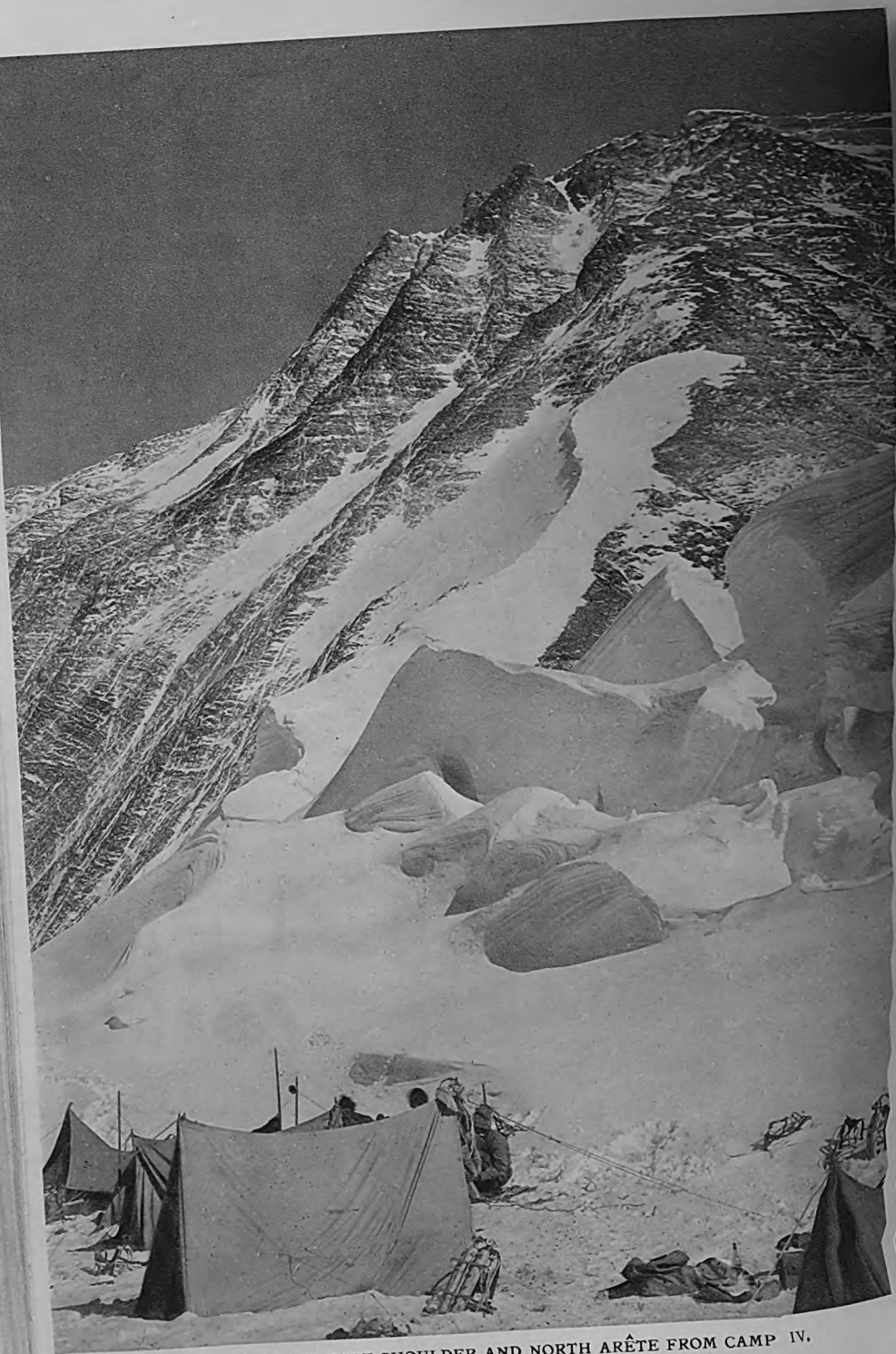


11. LOOKING DOWN THE EAST RONGBUK GLACIER FROM THE CHANG LA.

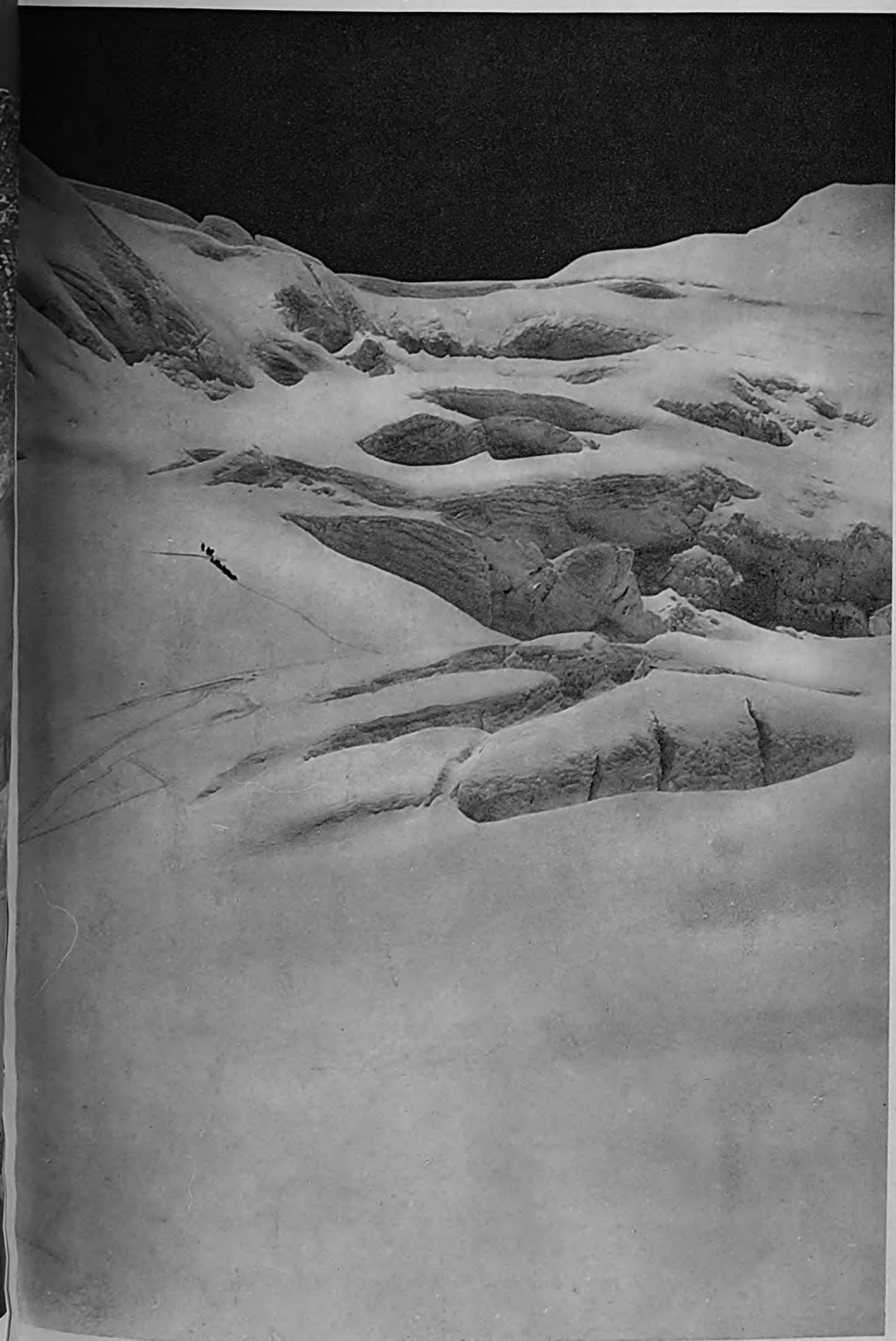
Camp III.



12. SUNSET FROM CAMP II.



14. THE NORTH-EAST SHOULDER AND NORTH ARÊTE FROM CAMP IV.

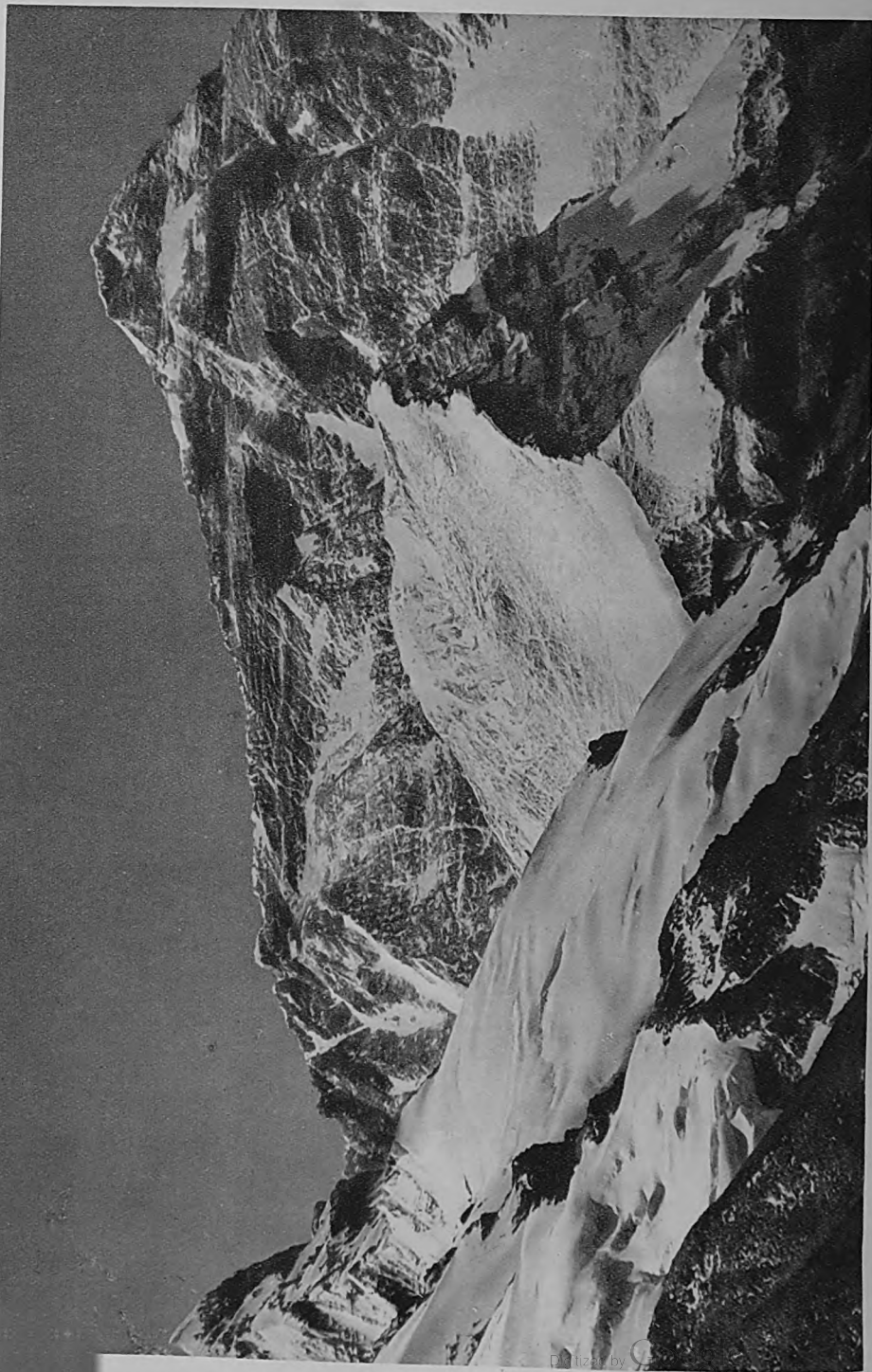


13. THE APPROACH TO THE CHANG LA

N.E. Shoulder

Changtse

Summit



15. THE NORTHERN FACE OF MT. EVEREST (TELEPHOTOGRAPH FROM THE BASE CAMP)

six miles N. of Tashidzom, and one mile E. of the 87° meridian, and its position may be identified on Map No. 1 of 'A.J.,' May 1922, by the two streams shown running N. and S. from it. Everest is thirty-six miles distant from it, bearing S. $\frac{3}{4}$ W., true.

Plates 4 and 5 show almost identical views of the Everest group, looking S.S.E., the photograph in Plate 5 having been taken from the foreground in the right-hand side of Plate 4. The Base camp was pitched between the Rongbuk monastery and the moraine shown in the foreground of Plate 5. The views look right up to the head of the Main Rongbuk valley, and the junction with the East Rongbuk valley is at the foot of the ridge running down from peak 22,580 directly towards the camera. The left-hand ridge of this peak, as shown here, corresponds with what appears as its right-hand ridge in Plate 12 (see below). The right-hand ridge here appears on the extreme left of Plate 15.

Plates 8 and 10.—The two peaks 23,180 and 22,460 on Plate 10 are the same as the two peaks on the extreme left of Plate 8. Peak 23,180 is described as peak 23,080 on Map 2 of 'A.J.,' May 1922, and has been identified as Dr. Kellas' 'light rock peak.' It appears in Plates 2 and 9 of 'A.J.,' May 1922, being the left hand of the two big peaks shown in the former. The snow immediately in front of peak 23,180 in Plate 10 is probably the end of the horizontal snow-ridge on the right of Plate 9 of May, over the top of which ridge peak 22,460 seems just to show. The view of the Khartaphu group in Plate 10 will also be found on the centre of Plate 11 'A.J.' of May, but in the latter instance the view is taken from a slightly higher level, and looking in a slightly more northerly direction. The right-hand part of Plate 8 gives a foreshortened view of the same group. The Rapiu La, at the extreme right-hand end of Plate 10, is the pass at the very head of the East Rongbuk glacier, at the foot of the N.E. ridge of Everest, and would lead over to the head of the Kama valley. The far side of the pass can be seen in the centre of Plate 20 of May. The low-lying clouds in the left-hand part of that photograph fill the head of the Kama valley, and partially hide the pass between it and the Kharta glacier.

Plate 11.—The view of the Khartaphu—peak 22,850 group appearing in this photograph is identical with that in Plate 18 of May, in which the height of the latter peak is omitted.

Plate 12.—Camp II. was on the E. bank of the East Rongbuk glacier, approximately opposite the 'b' of 'Rongbuk' on

Map 2 of May. The peak is indicated, but without height, at the head of the small branch glacier which joins the East Rongbuk glacier opposite the word 'East.' The view is taken looking in a westerly or north-westerly direction, with a branch glacier in the foreground, which is not shown on the map, but is situated S. of the branch glacier previously mentioned. (See also Notes on Plates 4 and 5 above.)

Peak 22,580 is probably identical with the one just to the right of the centre of Plate 10 of May, and which is seen towards the S.W., in which direction of view the long streak of rock running down the face, but not visible in Plate 12, might become opened up. It should be mentioned that Map 2 was prepared before the East Rongbuk valley had been fully explored, and that the correct delineation of the branch glaciers thereon cannot necessarily be depended upon as an aid towards the identification of peaks appearing in the photographs of either side of this valley.

Plate 13.—This view embraces the northern half of the slope leading to the North Col. The whole width of slope is visible in Plate 9.

Plate 15.—The peak on the extreme left of this picture is peak 22,580, the telephotograph being a large-scale view of the distant parts of Plates 4 and 5, but taken from a position rather further to the right hand than these two pictures. The line of sight slopes upwards in Plate 15, with the result that the summit of Changtse appears to be almost directly below the top of Everest, whereas the N. ridge of Changtse extends for a greater distance towards Everest, the highest point visible being immediately beneath the word 'Changtse' on the plate. The upper parts of the two snow gullies, which form a conspicuous feature in Plate 8, just show over the ridges of Changtse and peak 22,580 respectively.

P. J. H. U.

THE EVEREST EXPEDITIONS.

Conclusions.

TWO expeditions have now been made. The mountain is still unconquered. It is well to examine in the light of the past the measure of hope for the future.

The expedition of 1921 yielded all the results that were hoped for. Mallory discovered a probably possible route

to the summit by way of the N. face, and actually gained the N. Col. When the mountain is eventually climbed, whether he be of the party or not, no mountaineer will ever fail to give him the credit of this essential discovery. His name, with much greater justification than has been the case in many similar instances, ought to be attached to one of the great features of the mountain. The N. Col might well bear the name of the first white man to gain its crest. The splendid services of Col. Bury and the other members have been already recorded.

This year's expedition was to be an attack in force. A very strong party was got together, and the Everest Committee sanctioned and procured, not only every kind of stores and equipment that *might* be wanted, but, of the more critical articles of equipment, sent out as many as three or four alternatives. In the equipment was included a supply of oxygen in portable bottles, together with breathing apparatus.

The party reached the base camp in great fettle and with marvellous punctuality, due, as is admitted on all sides, to the driving power, tact in handling men, and organising ability of General Bruce.

The instructions were 'to make a determined effort with every available resource to reach the summit.'

About the capacity of Finch, Mallory, Norton, Somervell, to reach great heights and to stand cold and exposure there was no doubt. In experience of high ascents in the Alps, more especially in winter and summer snow conditions, and in perennial fitness Strutt, an older man, was scarcely to be equalled by any mountaineer, whether still active or not. He rendered solid services, spending weeks at over 20,000 ft. Morshead had attained over 23,500 ft. on Kamet, and had shown himself in the expedition of 1921 as a man of great endurance, in addition to eminent technical abilities. Wakefield and Crawford were more uncertain factors, but they rendered yeoman service and reached the N. Col. Geoffrey Bruce was a dark horse.

The indomitable Longstaff, with his great Himalayan experience, counted himself no longer on the active list, but his counsel was invaluable.

Starting from the N. Col on May 21, Mallory, Norton, Somervell, Morshead—Strutt, with great self-sacrifice, standing down—camped at about 25,000 ft., and on May 22, in quite passable weather, the first three gained a height now computed at 26,985 ft.—an advance of nearly 2400 ft. on the

previous recorded altitude attained. It is obvious from the official report, and from conversations with the men, that great hardships and dangers were encountered, while the attempt will remain as perfect an exhibition of unselfish mountain team-work as even our race can show.

A possible reason why a supply of oxygen was not taken with this party is that the apparatus needed overhauling. This could only be done by Finch. It was May 22, the actual day of the first attempt, before four sets of the apparatus could be passed ready for use.

So far as one can gather it had been decided, however, for some time, to make the initial attempt without the aid of oxygen.

There is this to be said for this decision: No one could foretell the much longer time for recovery, if indeed full recovery ever takes place, required by men exposed to such quite inordinate fatigue and hardships—nor foresee that the early arrival of the monsoon might allow insufficient time for such recovery and for a further full-power attempt, with oxygen, to which some of the forces detailed for the first attempt were essential.

It is as idle to conceal the fact that the absence of faith in the value of oxygen by several of the party contributed to the decision as to speculate what might have been the result had it been possible to use the whole resources of the expedition for one great attempt, before proceeding to make an interesting experiment.

And this absence of faith is scarcely to be wondered at, for, only last May, on high authority it was written: 'And this [the failure of the climbers to tolerate the restraint of the oxygen apparatus] would be a good thing, because it seems to us quite as important to discover how high a man can climb without oxygen as to get to a specified point, even the highest summit of the world, in conditions so artificial that they can never become "legitimate" mountaineering.'

This acclamation of a possible failure, this advocacy of a fresh objective, were not calculated to foster singleness of purpose.

I am aware that the article from which I quote could not have been actually seen by any of the climbers, but it is indicative of the atmosphere already created in the minds of some of them.

The point of view indicated in the quotation is difficult to fathom.

The Germans in using gas may well be held to have created an 'artificial' position. Were we not entitled to use an equally 'artificial' agent to re-establish equality? Let us conceive that, instead of using gas, they had created a very much rarefied zone of air—ought we to have dashed into this with no 'artificial' appliances? Would it be unsportsmanlike?

Yet Everest is to be allowed to clothe itself with air containing a far less proportion of oxygen than is needed for the development of the full powers of man, and the mountaineer who attempts to make good the deficit is held to create 'conditions so artificial that they can never become "legitimate" mountaineering.' As Finch, the protagonist of oxygen, puts it: One may use extraordinary clothes to counteract the cold, any kind of food or drink, yet when an essential to full efficiency requires to be administered by a tube from a receiver instead of being drunk out of a bottle, it is liable to condemnation as sinning against the canons of "legitimate" mountaineering!

One cannot afford to handicap oneself or to allow the mountain any points when Mt. Everest is the opponent.

Dr. Collie, with an authority that no one will gainsay, has stated the case once for all: 'What is oxygen but air? You are fairly certain to get up with its help—you *may* possibly get up without?'

Do we want to be *fairly certain*, or should we spend further thousands of pounds on an off-chance?

To come now to the attack with oxygen:

Finch, Geoffrey Bruce, and the Gurkha N.C.O. Tejbir left the N. Col on May 25, spent two nights and a day in a tent at about 26,000 ft., in weather such as few men have experienced and survived, and on May 27 the two Englishmen, carrying 40 lbs. apiece, attained a point on the N. face, 27,300 ft. high.

Finch's indomitable and reasoned will to win is nothing new to the men who know him. I need add nothing to the glowing words in which Geoffrey Bruce's, no longer the dark horse, gay submission to extreme hardship and undaunted resolution are described by his leader.

The party, for the object in view, was too weak, and, moreover, hopelessly handicapped by the conditions, yet they added a page to the history of the expedition that need fear no comparison.

To the great services rendered by Captain Noel, the official

photographer, and by Captain Morris, transport officer, all alike bear enthusiastic testimony.

Another horse, no longer dark, is the ready adaptability of the native porters to high mountain conditions. This much facilitates the lay-out of camps or oxygen supplies, and by so much relieves the European climbers of much of the burden of carrying, and so conserves their strength. The full powers of these natives have yet to be fathomed.

There is every hope of sending out one more expedition. If this is held over until 1924, it will allow time for the collating of the experiences of the earlier party and for an even more careful selection of stores and equipment.

Moreover, it will permit of giving candidates some training in *winter* snow conditions, more essential even than in Europe.

The conquest of the mountain is not worth men's lives. 'Do or die' has no place in the ethics of the Alpine Club, and the enormous cost of these expeditions precludes experiments, however interesting, while the objective is still unattained. This objective must be kept steadily in view, and its attainment be attempted with the determination we know our men to possess, with such reasonable amount of risk as their experience justifies, and with 'every available resource.'

J. P. FARRAR.

IN MEMORIAM.

THOMAS BLANFORD.

1836—1922.

THOMAS BLANFORD, who died on March 24, aged 85, was elected a member of the Club in December 1860, and thus belongs to the small body who have appeared in our Club Lists for more than sixty years. His name is now probably known to but few, but in his day he earned an honourable place among the Conquerors of the Alps, having played a part fully equal to that of R. C. Nichols during the seasons of 1863-64-65 in the exploration of the Tarentaise. His own special conquests were the Dent Parrachée and the Grande Motte, expeditions which he described in a Paper on 'The Maurienne,' 'A.J.' ii., and he joined with Nichols in the first ascents of the Granta Parei and the Tsantaleina, and an almost successful attempt on the Bec de L'Invergnan, also assisting him with his well-known map. Mr. Blanford was a Past Master of the Cordwainers' Company. Of his six sons two were killed in the War, while a third received the M.C.



C. COMYNS-TUCKER.



THOMAS BLANFORD.

COLONEL EMILIUS CLAYTON.

1842—1921.

COLONEL CLAYTON, R.A., who died in June 1921, aged 79, had been a member of the Alpine Club since 1872. He was intensely devoted to the mountains, and in spite of age went wonderfully well.

He was a Staff College man of high standing, and was gazetted Colonel R.A. in 1896, retiring in 1898. He was awarded an O.B.E. for services in Flanders and S. Russia during the war.

He possessed an intimate knowledge of Armenia and Kurdistan, having been Vice-Consul at Van, 1879–82. His expeditions are recorded in 'The Mountains of Kurdistan,' 'A.J.' xiii. 449. He settled at Charlcombe Manor, near Bath, about twenty years ago, and threw himself energetically into the public work of the neighbourhood, and the local papers bear warm testimony to his usefulness. Two of his sons were Gunners like their father.

CHARLES COMYNS-TUCKER.

1843—1922.

In Mr. Comyns-Tucker, who died on April 27, in his eightieth year, the Club loses another of its veterans. He was elected a member in 1866, served on the Committee in 1875–7, and as Honorary Librarian in 1880, when he compiled the first catalogue of our Library.

Comyns-Tucker was introduced to the Alps while still a Marlborough schoolboy by his headmaster, afterwards Dean Bradley. But his climbing career began in 1866, when we were undergraduates together at University College, Oxford. In that and the following year he went with me to the Alps. We climbed a good deal and made several first ascents, the Piz Cengalo and Cima di Castello in the Val Masino district, the Tour du Grand St. Pierre in the Graians, and the Tour Ronde from Courmayeur.

In 1868 Comyns-Tucker was my companion in an eight-months' journey, which extended from the First Cataract to Tabreez and St. Petersburg, and included the exploration of the Central Caucasus and the first ascents of Kazbek and Elbruz. In after-years he frequently visited the Alps, chiefly with T. H. Carson or myself, and made many expeditions in widely scattered districts. Some of his best climbing was done in the Dolomites, where, with Carson, he accomplished the first ascents of the two highest summits of the Rosengarten Gebirge, the Federer Kogel [Rosengartenspitze] and Kessel Kogel. The Federer Kogel was gained by a climb which François Dévouassoud counted as one of the hardest rock-scrambles he knew. In the Primiero group Comyns-Tucker had

to his credit its highest summit, the Cima della Vezzana, and the Sass Maor; West of the Adige the Cima di Brenta. In the last edition of the usually infallible 'Alpine Guide,' several of these climbs will be found ascribed to F. F. Tuckett, an error due probably to the partial knowledge and excessive zeal of a printer's proof-reader.

Comyns-Tucker was an all-round steady and safe mountaineer: on rock he proved himself a good cragsman, on snow and ice a trustworthy comrade on the rope. Short of stature, he had great powers of endurance, and was always ready to take a bout of step-cutting when François Dévouassoud, who often made up our trio, grew weary. In our eastern wanderings his constant good spirits and cheerful endurance of the ups and downs of distant travel made him the best of companions. On my return to Urusbieh, after twenty years' absence, one of our Elbruz porters enquired warmly after 'the little Gospodin who walked so bravely.'

Comyns-Tucker's last climb was up the Titlis when he had reached seventy. He contributed several excellent papers to this JOURNAL. Amongst them I may mention those on the Rosengarten, the Caucasus, the Pania della Croce, and 'A Week in the Graians.'

A scholar of University College and a Classical First, Comyns-Tucker, on his return from the Caucasus, was elected to a Fellowship in his own College. After a few years' residence as a Tutor at Oxford he came to town, and for many years practised as a Conveyancer at the Chancery Bar.

Later in life he retired to his country home on Exmoor, which had been in his family for many generations. There he frequently disturbed his neighbours' peace of mind by ingeminating war and insisting on England's unreadiness for the coming struggle. He lived long enough to see his predictions fulfilled and his foresight acclaimed by some of his former critics.

Comyns-Tucker married in 1879 Miss Scott of Crevagh, co. Clare, who, with three daughters, survives him.

D. W. F.

[A portrait of Mr. Tucker in 1868 appears in 'A.J.' xxx., opposite p. 186.]

J. T. WILLS.

1858-1922.

JOHN TAYLER WILLS was born on January 4, 1858. He was the eldest son of Alfred Wills, afterwards Mr. Justice Wills. His mother was a Miss Martineau, who during her brief married life was largely instrumental in helping her husband to plan and build his Alpine house, the Eagles' Nest, completed in 1859, the year before her death, but not regularly occupied until 1861, in which year Jack Wills went out to the Alps for the first time.

This annual visit to the Eagles' Nest for two or more months was repeated almost without interruption throughout the whole of his life, and the familiarity which he in this way acquired with the surrounding mountains made him the guide and friend of the many visitors to Sir Alfred Wills's summer home. Few who received their first lessons in mountaineering there will forget his unfailing sympathy, ready help, and consideration, which made him beloved by all who came in contact with him. It says much for his care and capacity as a mountaineer that, notwithstanding the inexperience of so many of his climbing parties, and the treacherous nature of the limestone rocks, steep grass and shale slopes of the district, only on one occasion did a serious accident happen to any member of his party, and that was mainly due to the giving way of a step in the shale, after heavy rain had rendered the mountain side unusually treacherous.

In 1871 Wills went to Fettes College, Edinburgh. In 1875 he became head boy, and next year won a Balliol scholarship with which he went to Oxford in October 1877. In 1876 he was invited by T. S. Kennedy, an Alpine friend of his father's, to stay with him at Leeds, and later this led to his climbing with Kennedy and his guides, Imseng and Maurer, during several summers. In 1875 they were in the Mont Blanc district and climbed the Géant with Imseng. In 1877 Kennedy and Maurer came to the Eagles' Nest for a few days and were introduced to some of its more difficult climbs, as to the unpleasantness of which Maurer expressed himself in no doubtful sense. They then went over to Chamonix and followed the high-level route as far as the Col du Sonadon, where they were turned back by bad weather.

While at Oxford he went in for long-distance running, a natural result of the speed and endurance he had already shown himself capable of in his walks and climbs in the Alps. This led to his running in the three miles' race at the Inter-Varsity Sports in 1878, coming in second to a strong competitor.

Due, no doubt, to his combining hard mental with hard physical work he had a severe breakdown that summer, from the effects of which he never entirely recovered. As showing his capacity for speed on the mountains, I cannot do better than quote a letter written to his niece last October. 'We started for the Dent du Midi from Champéry at 4.30 A.M. I was aged about 13. My cousin, W. Wills, was at his very best, being at College, rowing in its boat and very fit. Louis Gurlie carried for us. On return we had hot big baths in a bath-house across the road, facing the smoking-room, where a telescope stood in the open window. On a bench outside under the window I was sitting when I heard two men speaking. "It is about time to look for that young Englishman and boy at the top." "Hardly yet," said No. 2; "one was only a boy. What time did they start?" "The boots said 4.30." No. 2, using the telescope, said, "They are not on the top, not yet, as I thought." I spoke up: "They did not stop long at the top: the wind there

was cold. I am one of them and have just had my hot bath." I had some difficulty in convincing them of the truth of my statement.'

In 1880 he went out to Colorado in order to rest from mental work, but returned to take his degree in 1881. In 1882 he began to read in his father's chambers for the Bar, to which he was called in due course, but he never practised.

About 1880 he engaged as porter or guide Joseph Fournier, of Salvan, then quite a young man, and either alone with Fournier, or with him and Principal Viriamu Jones or myself, he made many expeditions in the Mont Blanc, Zermatt, and Grindelwald districts.

In 'A.J.' xii. he mentions that in 1884 Fournier and he left the Matterhorn hut on the Hörnli at dawn, crossed the ridge near the Furggenjoch, skirted the foot of the precipices on hard névé to the Breuil route in the couloir du Lion, which he struck in two hours from the hut. They got back to Zermatt, over the summit of the Matterhorn, with great ease and many rests in fourteen hours.

At Balliol he made friends with Viriamu Jones, who afterwards married Wills's first cousin, with Lord Curzon, with Walter Lawrence, who later, when Lord Curzon was Viceroy of India, became his private secretary, and with Lord Milner, and many others who remained his friends in after-life.

In 1879 he took Jones out to the Eagles' Nest, and they afterwards went on to Chamonix. This was the beginning of many Alpine journeys together, usually ending up at the Eagles' Nest.

His climbs were apt to be interfered with by want of due organisation, as his hopeful temperament led him to provide insufficiently against the length of the expedition in the matter of food and clothing.

As an instance of the first, I remember an expedition in the Pyrenees when we were eighteen hours without a morsel of food; and from the latter cause Jones and he were obliged to turn back when within an hour of the top of Mont Blanc.

They climbed the Eiger and Jungfrau in one day, an unusual combination, and once he proposed to take me from Chermontane, in the Val de Bagnes (where we had spent a miserable night in pouring rain in a stone hut shared with eighteen unsavoury shepherds), to Zermatt in one day by the Cols de Collon and Valpelline, but, luckily, somewhat late in the afternoon, when we were on our way up to the latter col, heavy snow, which had been threatening all day, came on in earnest and drove us down to the safer retreat of the hotel at Arolla. In 1887 he, Fournier and I followed Sir Seymour King's route up the Grindelwald face of the Eiger Hörnli, a few days after King's first ascent with Supersax.

He had a wonderful eye for country and a great knowledge of geography, both local and general, and by no means limited to Europe, but extending to all parts of the world.

In 1884 he went out to Zinal, where he met W. F. Donkin, and on August 25 they climbed the Matterhorn 'from Zermatt.' On September 1 he ascended the Weisshorn. On September 5, having

met Dr. Claude Wilson and his brother, he brought them over to the Eagles' Nest, where they spent a few days alone—the house not being occupied that summer. Dr. Wilson has always remembered one of his experiences on that occasion. Late in the afternoon Wills proposed to take them out for a walk. They went up a passage in the cliffs called 'the 5th arête'; which is certainly pretty steep and not too easy. When they were in the middle of the steepest part on the way down, it became quite dark. Wilson anticipated an uncomfortable night out, but Wills, relying on his local knowledge, was fully prepared to go on. And they went on by a route which has probably not been made before or since. There was no rope, but an Eagles' Nest substitute for keeping a party together, and questionably also as a measure of safety, was adopted, each man holding on to the ankle of the man above him. At one place Wilson, who was leading and feeling about for footholds in the dark, failed to find anything on which to rest his dangling foot. Jack said, 'Drop a stone down.' This was done, and some seconds elapsed before it was heard to strike the rocks. 'Good,' said Jack, 'that shows where we are. We must go up again and get into the next gully'; and the party were nearing safety when they were 'rescued' by Grande Marie, the able, amiable, and ample cuisinière of the Eagles' Nest, who had come out to look for them with a lantern.

During the last twenty-five years he almost always took his holiday at the Eagles' Nest, acting as guide, philosopher, and friend to his father's and sister's many guests and visitors in their climbs and walks in the Valley of Sixt. He taught his Norton nephews the beginning of mountain craft, which has resulted in one of them being chosen as a member of the Everest Expedition, so that the family tradition and love of the mountains is passed on to the third generation.

In 1895 he went out to the Zambesi region with an exploring party, and very nearly died from severe malarial fever. Soon afterwards he became interested in a scheme for growing cotton in the Tokar delta on the Red Sea littoral of the Soudan, and spent nearly two years in Egypt for this purpose. It was a scheme with considerable possibilities, but unfortunately it was started before the country was in a settled state, and the outbreak of the Mahdi rebellion caused the Egyptian Government to interfere, and refuse to allow him to continue the work. After this he returned to England and engaged in literary work, which made him gradually more and more of a recluse, till his old friends almost lost sight of him, particularly when he left the rooms over the Alpine Club where he lived some years, and went to live in a little house at Kew left him by his aunt.

Two years ago began the distressing illness which finally caused his death on March 18, 1922.

I cannot do better than close this account of his Alpine career with a quotation from a letter written by his friend Viriamu Jones:

'Jack was not a mere climber, but a true mountaineer—a good guide; quick, it is true, but most prudent and cautious and quite willing to go slowly, if asked. The mountains have been to Jack an intellectual problem, and he knows how they are made, how they are arranged, and how they are to be ascended.' And for him the aphorism of another old Alpine friend, Monsieur Loppé, was particularly true: 'Il n'y a pas de montagnes dangereuses: il n'y a que des personnes qui sont dangereuses sur les montagnes.'

W. A. W.

V. H. GATTY.

1864–1922.

VICTOR HERBERT GATTY, who died while grouse shooting on August 12, was educated at Harrow, and after a period spent in travel, joined, and became eventually Managing Director of, F. A. Gatty & Co., Ltd., Dye Works, Preston.

He was a keen motorist, fond of shooting and mountaineering, and was a J.P. for the County of Lancaster.

During the war he was O.C. No. 20 Company of the Lancashire R.A.S.C., M.T. (V.).

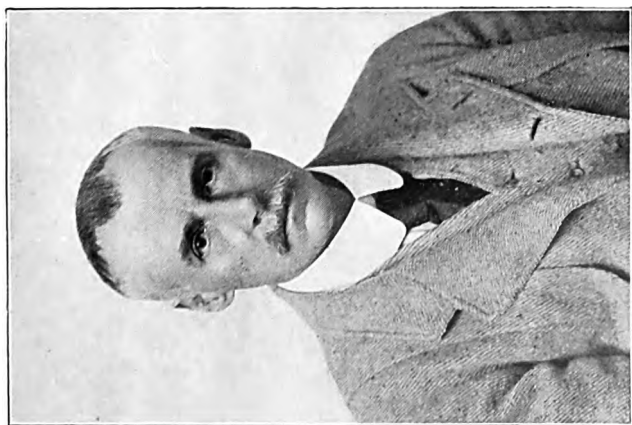
He became a member of the Alpine Club in 1894, among his qualifying climbs being the Aiguilles Rouges, Rimpfischhorn, Obergabelhorn, Monte Rosa, Zinal Rothhorn, Portiengrat, Eiger, Wetterhorn, Schreckhorn, Jungfrau (from Rottal), Matterhorn, Mittelgabelhorn (first ascent and traverse), Blümlisalp horn, Mönch, Finsteraarhorn, Geisspfad Spitzen (S. point, first ascent), Monte Leone (first recorded ascent by N. face), Fletschhorn, and Gspaltenhorn. He appears to have kept no regular record of his later ascents, but evidence of his mountaineering activities are to be found in various papers contributed to the ALPINE JOURNAL, on Spitzbergen ('A.J.' xvii. and xviii.), Norway ('A.J.' xix. and xx.), the Pyrenees ('A.J.' xxiv.), Corsica ('A.J.' xxix.).

My meeting with Gatty in 1905 was curious. I had written a paper on 'The Glacial Snow of Ben Nevis' for Symons' *Meteorological Magazine* (March 1905). While visiting the snow-beds I met him on the same errand. He had seen the paper, and being very interested in glaciers and moraines had come to investigate on the spot. He subsequently contributed a paper to the R.G.S. *Journal* for May 1906 on 'The Glacial Aspect of Ben Nevis.'

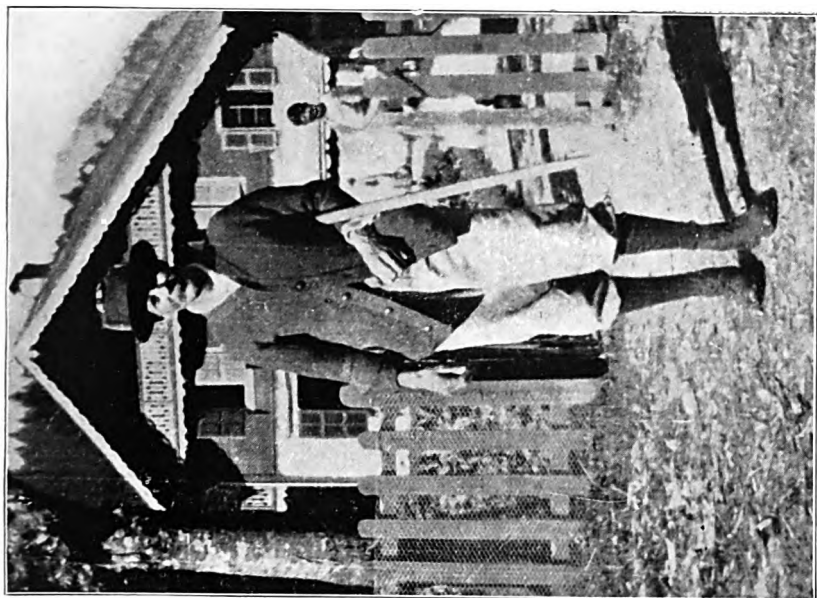
In July 1909 I went with him as his guest to the Lake District. After this, every year up to 1914 he gave me the most delightful holiday that man could possibly have.

In 1910 he took me to Tyrol. Bad conditions baulked us on the Ortler. A few days were spent at the hotel on the Stelvio, whence we ascended the Naglerspitze (10,690).

In 1911 Norway was our destination. From Otta we drove



V. H. GATTY.



J. T. WILLS.

through Sörum to Roisheim, whence Galdhöpiggjen was climbed, and spending the night at Spiterstulen we crossed the Galdhöpiggjen Range from the Visdal to the Lierdal, ascending the Tveraabrae to the narrow ridge of broken rock which forms the col, and descending the Illabrae and then traversing the steep slopes to the Lierdal, reaching Roisheim at midnight ('A.J.' Vol. xxv. No. 194). This proved to be a new expedition. From Hjelle the vast snowfield of the Jostedalsbrae was visited, returning *via* the Sundal —16 hours of glacier and snowfield.

In 1912 Gatty took me to the Pyrenees. We spent a few days at Gabas, in the W. end of the chain, and then went to Gavarnie, whence our chief expedition was to the Brèche de Roland, thence to the Taillon (10,500 ft.), and down into the Spanish Val D'Arazas, and back by Bouchero the next day.

We finished up at the E. end of the Range with the Pic Carlitte (9500 ft.). On this last excursion we walked into the small republic of Andorra.

The year 1913 found us in the Western Graians, the Rechassee, the Pointe de la Glière, a delightful rock climb, and the Dôme du Chassefôret being ascended. A few days were spent at the Petit St. Bernard, and Monte Mirividi and other summits visited.

The following year brought the Great War, but my friend luckily decided to go early to Corsica once more, and May saw us established at Vizzavona. Our doings were recorded by Gatty in the *ALPINE JOURNAL*, Vol. xxix. No. 207, and by myself in the *Meteorological Magazine*, Vol. I., No. 591.

Never a robust man, Gatty overstrained himself in the war owing to his many activities, and he was never equal to serious climbing afterwards.

In recent years I spent happy days with him among the Cumberland Fells, in Snowdonia, and only last May in the Isle of Man, when Snaefell was our last ascent together.

He loved the hills and hated the beaten track; least of all did he enjoy a crowded mountain hut.

He passed away among the peaceful, heather-covered solitudes where Nature, undisputed, holds her sway.

R. P. DANSEY,
Rector of Kentchurch.

PETER BAUMANN.

1833–1921.

PETER BAUMANN,¹ 'Old Peter' as he has been known for many years, died after a very short illness at his home in Grindelwald, on December 17, at the age of eighty-eight. A man of most temperate habits all his life, he kept his faculties and retained his uprightness

¹ A fine portrait will be found in *Pioneers*.

of mind and body to the end. He was the last of that very distinguished group of early Grindelwald pioneers who did so much not only to explore their own mountains, but to raise the standard of the craft to a very high level.

It is well said in an excellent article on him in 'The Pioneers of the Alps':

'Turning over the leaves of his *Führerbuch*, one recognises many names well known in the Alps,—Mr. Leslie Stephen, Professor Tyndall, Mr. A. W. Moore, and others of the best known early Alpine pioneers. And it is impossible to meet Old Peter without instinctively becoming aware of the influence which long associations with such men has had upon his bearing and character. There are few names familiar to readers of "Peaks, Passes and Glaciers," or even of the more recent volumes of the *ALPINE JOURNAL*, which are not to be found in his book. And all have recorded not only the high estimation in which they hold Baumann as a guide, but the great respect and friendly feeling with which they regard him as a man. Somehow these certificates have a genuine ring of sincerity, which distinguish them from the conventional "form of sound words" so often seen in guides' books.'

To his fellow-travellers Peter was not only an excellent guide, but he became an intimate friend, and if those who climb without guides gain perhaps a greater degree of enjoyment in certain respects, yet they lose a great deal in missing the companionship and intimate knowledge of men of his stamp.

As a mountaineer he stood in every respect in the first rank, even if he was not as fortunate in the conquest of new peaks as some of his contemporaries. Yet he was one of Leslie Stephen's guides on his first crossing the great Oberland passes; he was one of Messrs. Taylor and Pendlebury's party, who made the first serious attempt on the Aiguille du Dru, and devised the route by which it was afterwards conquered; he was the first to climb the Schreckhorn from the Lauteraarsattel; he made the second ascent of the Eiger and several new routes on the Berglistock and the Klein Schreckhorn, and a number of minor first ascents not all of which have been recorded. His *Führerbuch* is not a complete record of all his expeditions; for in later years he was rather careless of that book, and when travelling away from home would not take it with him, so that he was with me several years without an entry being made.

Tall, strong, and well-made, he was a powerful wrestler in his early days, an excellent shot, a chamois hunter, always a keen lover and observer of wild animals, and also a bit of a botanist, but most of all not only intelligent and observant, but a reader and thinker, whose range of ideas extended far beyond his immediate surroundings. Thus days and nights spent in his company alone would, quite apart from the immediate object in view, always be full of

interest, and some of the happiest days I spent with him were when weather conditions were not sufficiently favourable for high ascents, and we would go out by ourselves to look for chamois, and find them in large numbers on the less frequented slopes of the Mettenberg or of the Oberaar Glacier; or when reaching our bivouac in the early afternoons we would have time for long discussions on subjects far removed from his daily task.

On the mountains he was always cheerful, and especially under what appeared to be adverse circumstances. In a particularly difficult place he would break out into his favourite song 'Auf dem Felsen ist mein Leben und im Thal thu Ich kein gut,' but though good on rocks, he was in his real element on snow and ice, an infallible judge, even from long distances, of their condition. The expeditions on the N. side of the Jungfrau appealed to him more than any others. The difficulties of finding a way through intricate glaciers attracted him, and well do I remember his joy in leading up the Moming from the Arpitetta Alp, or the Zwillingssjoch, and Castor by the N.W. arête. 'Das ist schön,' he would call out repeatedly, and confess that such expeditions might equal those of his beloved Oberland. The beauty of the mountains appealed to him deeply.

Strong and determined in character, he soon assumed leadership when joining other parties, but he was most kind and generous to the younger men, and did everything he could to teach them. Slack workmanship he could not stand, and a badly cut step or a hut not left in first-class order would arouse his anger, and he was not a good man to quarrel with. He made it his business to bring on those aspiring to become guides. Thus I remember taking Christian Jossi out on his first ascents of the Schreckhorn and Eiger; and others, who have since gained fame, have come with us as porters or second guides, sometimes not without serious risk to ourselves. To his example and teaching I think the younger generation of guides owes a great deal.

Keen as he was in the exercise of his profession, and careful of all the needs and comforts of his Herr, there was about him a great sense of humour and great good-nature.

On one occasion as we were starting early in the morning to climb one of the Zermatt mountains, he led at a tremendous pace. The weather was fine, everything looked auspicious, and there seemed no need to hurry; but I kept it up as long as I could. In the end, however, I had to cry for mercy. 'You don't like it?' he called back. 'Well, I owed you that for the way you raced me down the Lötschenthal the day before yesterday.'

Guideless parties were not altogether to his liking; at least as represented in those days by some Continental climbers. Once on the way to the Schwarzegg Hut, he told me of two guideless Austrians whom we should find there bent on the Schreckhorn; but he was not going to show them the way up; they must find it for themselves. When we arrived we found the two Austrians,

who had not yet accomplished anything. Within half an hour I found them and Peter in close conversation, and next day they climbed the mountain by the Anderson Grat, following the exact route he had pointed out to them. Numerous other instances of kindness and consideration for others occur to me. In cases of accidents to other parties he was ever ready to help, efficient and resourceful. He himself was the victim of only one slight accident, due to the carelessness and obstinacy of the leading Chamonix guide, who would insist on crossing a treacherous bridge against which Peter, the last man on the rope, had warned him. I mention this in order to refer to the determined and uncomplaining way in which he walked down from the Grand Mulets with several ribs broken, refusing help even after we had reached the Pierre Pointue.

At home he was a devoted father, who brought up his family carefully, perhaps somewhat sternly. Of a deeply religious turn of mind, a regular church-goer, and a stricter observer of Sundays than most of his brethren, he was the chosen companion of Strasser, the highly gifted and popular late Pfarrer of Grindelwald, who testified to his friendship by some humorous verses in Peter's book. You could not be with him for many hours without being impressed by his straightforwardness and simplicity.

Peter's travels extended not only to Chamonix and Zermatt, but to the Dauphiné and the Engadine; but it must be admitted that he preferred his own Oberland mountains to any others, and when somewhat beyond the age of sixty he did not like to leave his own district, much to the regret of those whose constant companion he had been for a long time.

It is difficult to speak in measured terms of one, friendship with whom has extended over a period of upwards of forty-five years. I think I must have spent twenty seasons in the Alps with him. As one recalls those happy days, every climb, every incident rises to one's memory with absolute distinctness. Whatever the circumstances, nothing ever disturbed the good-fellowship and mutual trust between us, which only grew stronger as the years went by. Last Christmas I went to Grindelwald in the hope of seeing him once more. I arrived a week too late, but I was able to hear about his last days, and the great respect and affection in which he had been held by the whole community in his native valley.

To the younger generation of climbers I can only wish that it may be their lot to be taught the craft by men such as he, and to learn to know not only the mountains, but also the best of those who dwell amongst them and to gain their friendship.

F. S.

MICHEL PAYOT.

1839-1922.

MICHEL PAYOT, a great name in the memories of veteran English climbers, succumbed on July 21 to a paralytic seizure after a week's illness.

There is little to be said about him that has not been well said in this JOURNAL by men who knew and appreciated his great qualities, whether as mountaineer or as man. With the late Mr. James Eccles he travelled for forty consecutive seasons, and Mr. Eccles contributed to 'Pioneers of the Alps' a memorable appreciation of his great guide.

Moreover, the obituary notice of Mr. Eccles himself ('A.J.' xxx. 198 *seq.*) might be well said to be equally a testimony to the great ability of Michel Payot.

Their greatest expedition, the ascent of Mont Blanc de Courmayeur from the head of the Brouillard and Fresnay Glaciers ('A.J.' viii. 337, 409 *seq.*; xxiv. 679 (appreciation)), was only repeated in 1919—forty-four years afterwards—by a very strong English party with two guides. The expedition is described on p. 117 *seq.*

Michel retained to the end all his mental faculties, and only last year, we learn from Mr. William Fisher, his friend of thirty-five years, he walked from Les Mottets to Courmayeur over the Col de la Seigne and back within the twenty-four hours.

Very characteristic portraits of him are to be found in 'Pioneers,' and in 'A.J.' xxx.

CÉLESTIN PASSET.

A LA fin de 1917 mourait à Gavarnie d'une attaque de paralysie le guide Célestin Passet.

Il convient d'autant plus de lui consacrer quelques lignes dans L'ALPINE JOURNAL qu'il avait une certaine notoriété parmi les chasseurs d'isards anglais qu'il accompagnait régulièrement non seulement dans les Pyrénées, mais en Sardaigne, en Syrie, en Arabie, en Tunisie, et jusque chez les Somalis, en quête du grand Koudou. Longue est la liste des noms de ses clients que l'on peut lire gravés sur une longue-vue qu'ils lui offrirent. Et ceux qui ont lu les 'Short Stalks' de Mr. E. N. Buxton se rappellent peut-être l'amusant portrait qu'il en donna.

Mais Célestin fut aussi un excellent guide de sommets, au coup d'œil sûr, supérieurement adroit et agile. A la Meije, aux Ecrins, au Mont-Blanc il avait appris ce qu'est, comme il le disait, 'une vraie montagne,' et déjà de premier ordre sur le rocher, il le devint bientôt sur la glace. Je ne citerai comme exemples de son savoir-

faire que le Couloir de Gaube au Vignemale et la grande chute de glace au Mont-Perdu que nous escaladâmes quatre fois ensemble.

Intelligent, spirituel, peu bavard et ennemi de toute réclame, mince et élégant, il se plaisait seulement dans les courses difficiles et c'est parmi ceux qui les aimaient que se recrutaient ses clients bientôt devenus ses amis.

Chaque fois que j'entrais chez lui il se doutait que je venais lui proposer du nouveau, et quand je lui avais exposé mon plan, 'Ce serait bien joli,' disait-il; 'quand partons nous?' Mais j'avais moins de succès auprès de ses enfants, et un jour que mes idées étaient plus particulièrement séduisantes: 'Je crois que vous êtes un peu "imbécile,"' me servit sa fille.

Pendant 25 ans nous parcourûmes ensemble les Pyrénées, y trouvant de quoi satisfaire les plus exigeants en fait de sport. Et il semblait que Célestin ne vieillirait jamais.

Il fut dans les Pyrénées une figure à part: il ne connut pas la célébrité des virtuoses des Alpes, mais il en était digne, et je réclame pour son nom une place parmi ceux des grands guides.

H. BRULLE, A.C.

THE ALPINE CLUB LIBRARY.

The following additions have been made to the Library:—

Club Publications.

Akad. Alpenklub Bern. 16. Jahresbericht. 9 x 6½: pp. 28. 1921

Neue Touren: O. A. Hug, Fründenjoch v. S.: Claridenstock N. Wand:

E. W. Berrger, Galenstock O. Wand: M. Liniger, Fründenhorn W. Grat:

Mönch N. Wand: Grosshorn N.W. Grat: P. Schmid, Ulrichspitze W.

Wand: H. Engster, Cerro de Armas: Tolima.

Akad. Alpen-Club Zürich. Jahresb. 26. 9 x 6: pp. 24. 1921

Neue Touren, 1921: M. Liniger, Fründenhorn W. Grat; Mönch N.

Wand; Grosshorn N.W. Grat: R. Halder, Schlossberg N.E. Wand u. W.

Grat: R. Haefeli, Gr. Cornier S.O. Rippe: R. v. Tschärner, Les Droites

O.-W. Gipfel, Abst. Talefregl.: M. Kutz, Olympus.

Alpine Club. A Subject Index of books and articles in the library of the Club, excluding references to the publications of various Alpine Clubs, has been prepared and typewritten, and may be consulted at the Club rooms.

Alpine Club of Canada. Seventeenth Annual Camp, 1922. Palliser Pass.

6 x 3½: pp. 12.

— Seventeenth Annual Camp, Palliser Pass. July 29 to August 12, 1922.

6 x 3: pp. 10.

— Constitution and list of members. 6½ x 4½: pp. 36. 1922

Canadian Alpine Journal, vol. 12, 1921-2. 9 x 6: pp. 207: plates. 1922

The articles are:—A. L. Mumm, Mt. Everest: A. H. MacCarthy, First

Ascent of Mt. Eon, and its Fatality: J. W. A. Hickson, Mt. Forbes: H. S.

Hall, First Ascent Mt. French: E. O. Wheeler, Traverse of Terrapi and

Descent West Ridge of Magog: W. W. Foster, First Ascent Mt. Sturdee:

L. S. Crosby, First Ascent Mt. Fifi: C. G. Wates, Mt. Edmonton: J. M.

Thorington, Asulkan-Abbott Traverse: W. E. Stone, Ascent of Mt. Uto:

L. H. Lindsay, First Attempt Mt. Eon: C. E. Fay, Old Times in Canadian

Alps: J. A. Oslter, Visit to Canadian Rockies: E. Parker, Mountaineering

Classics: R. W. Cautley, Characteristics of Passes in Canadian Rockies:

A. O. Wheeler, Location of Mts. Brown and Hooker.

- Appalachian Mountain Club.** Register for 1922. 7 × 4: pp. 128.
- Associated Mountaineering Clubs of N. America.** Bulletin. 5½ × 4: pp. 41. 1922
- Bulletin pyrénéen.** 25me année, no. 151-9. 10 × 6½: pp. 300: ill. 1921-2
- Among the articles are the following:—*H. Beraldi*, Passé du Pyrénéisme, with many illustrations of old plac. : *Rayssé*, Pic de Tristagnes : *P. Fourment*, Mont Perdu 1919 : *P. Rondou*, Toponymie Vallée de Baresges : *Maury*, Massif de Neu-Biéthe : *M. Gourdon*, Pays de Luchon : *E. Harlé*, Général de Nansouty : *G. Ledormeur*, Région de Caunterets, with two fine panoramas : *L. Gaurier*, Études glaciaires, Vallée d'Ossau.
- C.A.F. Groupe de la haute montagne.** Statuts. ? 1914
- C.A.I.** 46° Congresso. 8½ × 5: pp. 11. 1922
- Guide e portatori, Alpi occidentali. Large sheet. 1922
- C.A.I. Verona.** Bollettino, anni 1-2. 9½ × 6½. 1921-2
- C.A.S. Führer für Leiter von Jugendorganisationswanderungen.** 6½ × 4: pp. 15. Aarau, Sauerländer (1921)
- Basel. Jahresbericht für 1921. 9 × 6: pp. 69. 1922
- Contains:—*Fr. Vöchting*, Eine Ueberschreitung der beiden Sustenhörner.
- Chaux de Fonds. Bulletin no. 30. 8 × 5½: pp. 93: plates. 1921
- Contains:—*E. Robert*, Jungfrau-Finsteraarhorn, 1921: *J. Gallet*, Crêt-à-bessas et la Combe d'Arbaz.
- Caingorm Club.** Rules. 6½ × 4½: pp. 11. 1921
- Centre Excurs. de Catalunya.** Conferencia publica. . . . Mont Everest. Large notice of. 1922
- Croatian Alpine Club.** Hvratsko Planinarsko Društvo, founded Oct. 25, 1874.
- Pravila. 9 × 6: pp. 8. (Rules.) 1921
- Pravila . . . podružnice. 9 × 6: pp. 6. (Section Rules.) n.d.
- Hvratski planinar. Nos. 1-3. 11 × 7½: plates. 1922
- D. u. Oe. A.-V. Zeitschrift** Bd. 51. 10½ × 7: pp. 104: maps, plates. 1920
- Contents:—*R. v. Kiebelberg*, Der Brenner: *H. Wopfner*, Besiedlung unserer Hochgebirgstäler: *Julius Mayr*, Tuxer Vorberge: *J. Purtscheller*, Kalkkögelfahrten: *H. Moschitz*, Habicht-Nordostwand, Ilmspitze: *Beilage*, Karte des Brennergebietes.
- Bd. 52. 10½ × 7: pp. 115: plates. 1921
- Contents:—*F. Tursky*, Alpine Flora: *C. Pardeller*, Älteste Wetter-Beobachtungsstation: *F. A. v. Fischer-Poturzyn*, Gesprengte Gipfel: *E. Mayer*, Glocknergruppe: *H. Amanshauser*, Geislergruppe: *K. Blodig*, Silvrettagruppe: *R. Holler*, Centralkaukasus.
- Warnsdorf. Bericht f. 1921. 11½ × 8½: pp. 3.
- Neustadt a. d. Haardt. Festschrift z. 25 jähr. Stiftungsfest. 8½ × 6½: pp. 9. 1921
- The Midland Association of Mountaineers, Birmingham.** Membership Book with Rules, List of Members. 5 × 3: pp. 24. 1922
- 'The objects of the Association shall be (a) to provide opportunities for meeting of members of mountaineering clubs and others interested in mountaineering for intercourse on mountaineering subjects, and (b) to promote interest in mountaineering among residents of the Midlands.'
- The Mountaineer.** Prospectus number. Mount Adams, Mount St. Helens, and the Goat Rocks. Sixteenth Annual Outing, 1922. 10½ × 7: pp. 12: ill. 1922
- Nederl. Alpen-Vereeniging.** Mededeelingen, 9½ × 6½: pp. 188: plates. 1921
- Among the articles are:—*P. M. v. d. Haer*, Grenoble naar Aosta: *T. Herzog*, Panorama van Wengernalp: *P. C. Visser*, Zmuttgrat v. d. Matterhorn: Iets over Frans Lochematter en andere gidsen: *B. T. v. Heemstra*, Bergtoeren bij Zermatt: *D. A. de Fremerij*, Een zevendaagsche tocht door Wallis: *J. Gewin*, Melchtal: *Pius XI* als alpinist.

- Nederl. Alpen-Vereeniging.** Mededeelingen, $9\frac{1}{2} \times 6$: pp. 102: ill. 1922
 Contains:—*W. H. Boissevain*, Met Skis op den Brunegghorn: *J. de Bruyn*, Bestijging v. d. Popocatepetl: Twee Bekende Gidsen uit de Dolomiten, Pompanin en Zagonel: *A. Schaap*, Bergtochten in Noord-Tyrol: *O. Tromp*, Twee traverseeringen: *P. O. Visser*, Een bivak, Täschhorn.
- Den Norske Turistforen.** Årbok. $9 \times 6\frac{1}{2}$: pp. vi, 261: map, plates. 1922
 Among the articles are:—*H. F. Reimers*, Over Sognefjeld: *R. Ødegaard*, Litt nyt fra Inderdalen: *F. Schjelderup*, Paa Jostedalsbraen ved vintertid: *H. Tønsberg*, Tindebestigere med motorbaati Nordlands-fjordene: *N. Onsager*, Fra Dovrefjeld; also, Tindebestiginger 1921 av Norsk Tindeclub.
- Oesterr. Alpenzeitung.** 43. Jahrg. Nr. 985–996. $10\frac{1}{2} \times 7\frac{1}{2}$: pp. 244. 1921
 Among the articles are:—*H. Wödl*, Bergsteiger einst u. jetzt: *J. Ittlinger*, Kaunergrat: *P. Borchers*, Rhodoegebirge: *H. Ficker*, Sagunaki: *H. Kees*, Piz Bernina ü. d. Biancogrät, Mte di Scerscen z. P. Bernina, P. Roseg ü. d. N.W. Grat: *O. Täuber*, Graue Turm: Gr. Keilsp.: *L. Sinek*, Kampl Nordwand: *G. Künne*, Glocknergruppe: *E. Zettler*, Fleischbank O.-Wand: *A. Deye*, Einser N.-Wand: *W. Martin*, Zinalrothorn u. Obergabelhorn: *K. Plaichinger*, Schartensp. S.-Grat.
 First ascents:—*A. Roessel*, Jungfrau v. W.: *L. Schifferer*, Westl. Stuhlwand: *R. Czegka*, Ringkamp v. O. ü. S.O.-Wand: *F. Herdlicka*, Pfeifer ü. d. Ostgrat: Zwerfenberg ü. d. S.O.-Grat: *O. Langl*, Dreischustersp. N. Wand: *Z. Baumgartner*, Griesstein W. Wand: Mittellalpenturm W.-Kante: Kl. Winkelkogel N.-Kante: Hohe Wechsel O.-Wand: *R. Czegka*, Gr. Grimming a. d. Wolkengrube: *R. Torstein* S.O.-Grat: *K. Wider*, Watzmann-Mittelsp. O.-Wand: *Z. Baumgartner*, Almkogel N.-Grat: *J. Ittlinger*, Weisskogel S.O.-Kante: *K. Dörfler*, Schwabenkopf W.-Grat: Watzekopf: *S. Huber*, Schindkopf S.-Wand: *F. Rigele*, Persailhorn N.-Wand: *S. Langes*, Dente dei Cimone S.W.-Seite: *H. Bonetti*, Rosetta W. Wand: *E. Merlet*, Cima della Madonna N.W.-Kante: Pala di S. Martino S.W.-Pfeiler: Campanile Pradidale O.-Wand: Cima Immink O.-Wand: *S. Langes*, Cima di Val di Roda: Pala di S. Bartolomeo W.-Wandschlucht: Cima di Val di Roda W. Wand: Cima di Paradidali N.-Ecke: *V. Perathoner*, Pala di S. Bartolomeo W.-Wand: *S. Langes*, Cimone d. Pala: *H. Lorenz*, Cima di Val di Roda N.W.-Wand: Pala di S. Martino Ueberkletterung: *G. Langes*, Cima dei Mulaz N.W.-Wand: *F. Rigele*, Breithorn S.O.-Wand: *F. Huber*, Schöneck W.-Wand: *F. Rigele*, Schönländsp. S.-Wand: *F. Herdlicka*, Hochgolling N.-Wand: *H. Grundwald*, Häuselsp.: *F. Schiske*, Waldhorn N.-Wand.
- Peñalara.** T. 10. $8\frac{1}{2} \times 6$: pp. 248: ill. 1921
 Among the articles are:—*J. M. R. Eulate*, Balandrau, Serra del Catillar, Ull de Ter, Valle alto d. Freser, Puigmal: *C. Gomez*, Picos de Europa.
- The Pinnacle Club.** List of members, etc. 5×4 : pp. 15. 1922
- Revue Alpine.** Vol. 22. $9\frac{1}{2} \times 6$: pp. 128: plates. 1921
 Among the articles are:—*M. B. Asquasciati*, Couloir de Lourousa: *Abbé Henry*, La Valpelline: *E. Gaillard*, Le Roc Rouge, massif des Sarrazins: *R. Godefroy*, Manigod: *G. F. Gugliermi*, Mont Dolent: *J. Savard*, Première traversée du Col des Nantillons: *E. Gaillard*, Aigs. de l'Hermite.
- Rock and Fell Climbing Club.** Journal, vol. 5, no. 3. $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 241–361: plates. 1921
 The articles are:—*H. M. Kelly*, New Climbs round Wastdale: *Dora Benson*, Day on Arran Hills: *A. O. Pigou*, Climbs in Birkness Combe: *A. W. Wakefield*, A Canadian Alpine Club Camp: *O. F. Holland*, Great Central Buttress of Scafell: *B. Beetham*, Scafell Central Buttress: *I. Hinchliffe*, Mardale: *W. P. Haskett-Smith*, Wastdale Forty Years Ago: *Mrs. Kelly*, The Pinnacle Club: *Mrs. Ravensley*, War Memorial on Scafell Pike.
 New Climbs:—Innominate Crack, Kern Knotts: Raven Route 'D' Buttress: Grey Buttress: Tarn Crag Buttress.
- Rucksack Club Journal.** Vol. 4, nos. 13–16. $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 322: plates. 1919–22
 Among the articles are:—*P. S. Minor*, New Climb on Doe Crags: *H. R. C. Carr*, Clogwen due Arddu: *H. M. Kelly*, Wastdale, New and Old Climbs:

- T. Fyles*, Peak Bagging in Vancouver: *E. H. Pryor*, In Dauphiné: *H. R. C. Carr*, Petit Clocher de Planereuse: *R. C. C. Carr*, Wetterhorn: *E. W. Steeple*, Climbs round Ogwen: *M. Wood*, Gritstone Rocks: List of New Climbs in Lake District, Wales, and Gritstone Rocks since 1914.
- Sarl.** Itinerari alpini. III, Dal rifugio Sari ai Laghi Verdi. $6\frac{1}{2} \times 4\frac{1}{2}$: pp. 22: ill. 1921
- Sci Club Mte. Cervino, Valtournanche.** Bollettino sociale. Numero unico. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 8. Maggio, 1922
- Sierra Club Bulletin.** Vol. 1, no. 3. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 345: plates. 1922
- Contents:—*J. N. Leconte*, Identification Great Peaks Southern Sierra: *F. P. Farquhar*, First Ascent Middle Palisade: *R. M. Price*, Exploration of Mt. Darwin: *H. C. Bradley*, Across Sierra Nevada on Skis.
- Svenska Turistför. Arsskrift.** $8\frac{1}{2} \times 5\frac{1}{2}$: plates. 1922
- Among the articles are:—*Sven Thulin*, Till toppen av Herrangstötan: *V. Lindkvist*, En bestigning av Kalaktjakkö.
- Tatra.** Zimní Sporty a zimní turistika ve vysokých Tatrách. $5\frac{1}{2} \times 8$: pp. 32: plates. Prague, 1921
- Ungar. Karpathenver.** Jahrbücher 41, 42, 44. $9\frac{1}{2} \times 6$: pp. 157, 79, 116. 1914, 15, 17
- These contain, *inter alia*:—1914: *Th. Posewitz*, Aus alten Zeiten in der Tatra Neue Touren, 1913: *A. Grosz*, Koptravasp. N.W. arête: Drachenswand v. S.: *E. Teschler*, Kl. Viszoka N.W.-Wand: *J. Komarnicki*, Roter Flossurm S. Grat: *Z. Klemensiewicz*, Petriksp. N.O. Wand: Westl. Gabelsp. S. Wand. 1917: *A. Grosz*, Erste Durchkletterung d. Südwand d. Markasi-turmes.

New Works.

- Baedeker, K.** Switzerland. 26th ed. $6\frac{1}{2} \times 4\frac{1}{2}$: pp. xxxvi, 537: maps. Leipzig, Baedeker: London, Unwin, 1922 15/-
- The Dominion of Canada . . . Alaska. 4th ed. 6×4 : pp. lxx, 420: maps. Leipzig, etc., 1922. 16/-
- Barns, T. Alexander.** The Wonderland of the Eastern Congo: The Region of the Snow-crowned Volcanoes. . . . $10 \times 6\frac{1}{2}$: pp. xxxv, 287: map, plates. London and New York, Putnam (1922)
- Chap. 10, The Ruwenzori Mountains, pp. 25–145: plates: attempt to ascend from the west or Congo side.
- Barth, Hans.** Grieben's Nord-Tirol und Vorarlberg. 29. Aufl. 6×4 : pp. 163: map. Berlin, Grieben, 1922
- Blacker, L. V. S.** On Secret Patrol in High Asia. With an Introduction by Sir George Younghusband. $8\frac{1}{2} \times 5\frac{1}{2}$: pp. xiv, 302: map, plates. London, Murray, 1922. 18/-
- This story of the pursuit of German agents across the Kuen Lun, Muztagh, and Pamirs, is told with most unusual vividness, both as to description of events and picturing of scenery. The work has for the reader the excitement of a well-told detective tale, with the advantage that the tale is true. The writer seems to have felt at times like 'a celluloid dog pursuing an asbestos cat in hell.'
- Casamorata, C.** La zona del Cervino e la sua rappresentazione cartografica. In l'Universo, Firenze, vol. 3, no. 5. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 291–8: maps. Maggio, 1922
- This contains reproductions of five maps of the Matterhorn from 1683.
- Congrès de Monaco.** Mai 1920. Congrès de l'alpinisme. Comptes rendus. $9 \times 5\frac{1}{2}$. Paris, 1922
- Tome 1: *L. Mercanton*, 42 ans de mensuration au Glacier du Rhône, 1874–1915: *P. Mougin*, Variations des glaciers du Mont Blanc: *A. Roccati*, Glaciers des Alpes Maritimes: *F. Sacco*, Études glaciologiques en Italie: *N. B. Sanson*, Climatologie des Montagnes Rocheuses du Canada: *A. O. Wheeler*, Glaciers d. Montagnes Rocheuses du Canada: *P. Girardin*, Evolution historique des cols alpestres: *L. Lavauden*, Faune alpine: *E. de Martonne*, Neige en montagne: *L. Mercanton*, Parc national suisse: *A. M. Kellas*, Les possibilités de faire l'ascension du Mt. Everest. Tome 2:

- W. M. Conway*, L'alpinisme passé et futur: *A. L. Mumm*, Sur l'Alpine Club: *F. J. Goggs*, Club alpin écossais: *B. Harmon*, C.A. du Canada: *C. A. Mathews*, Club d. grimpeurs: *M. H. E. Coulter*, C.A. de la Colombie brit.: *E. Des Gouttes*, C.A. Suisse: *H. Ferrand*, Soc. Tour. en Dauphiné: *H. Cuénot*, Le C.A.F.: *L. Llagostera*, Centre excours de Catalunya: *Antonio-Victory*, Peñalara: *Le Roy Jeffers*, Assoc. d. C.A.s de l'Amérique du Nord: *A. H. Bent*, Appalachian Club: *R. L. Glisan*, Mazama: *W. B. Badé*, Sierra Club: *H. G. Bryant*, C.A. Américain: *E. B. Webster*, Klahhane Club: *E. W. Allen*, Mountaineers: *H. Ferrand*, Cabanes de la Savoie: *A. Ferrari*, Refuges du C.A.I.: *J. Escarra*, Evolution de l'alpinisme: *H. Ferrand*, Publications d. divers clubs alpins: *G. Bobba*, Publications du C.A.I.: *W. A. B. Coolidge*, Brunnegghorn dans l'histoire: *W. Weston*, Alpes Japonaises.
- Coolidge, W. A. B.** My Alpine Scrapbook. 20. Some Early Ascents of the Dent de Morcles. In English Herald abroad. 13 x 9: pp. 8-9. April 1922
- My Alpine Scrapbook. 21. The names Besso and Moming. 22. Lyskamm and its Westerly Neighbours. In English Herald abroad. May 1922
- Historical names of the Rimpfischhorn and the Allalinhorn. The Dent d'Hérens. In English Herald abroad, Montreux. 12½ x 9½: p. 7. July 1922
- Corti, A.** Nel gruppo del Disgrazia. Studi ed esplorazioni. Est. d. Riv. C.A.I. Vol. 41, nos. 3-6. 9½ x 6½: pp. 35: ill. 1922
- Dorlzas, M.** Effect of the physical features of Greece on the character of the people. In Bull. Geogr. Soc. Phil., vol. 20, no. 1. 9½ x 6½: pp. 28-31: plates. January 1922
- Views of Parnassus, Olympus, etc.
- H. Dübi.** Guide des Alpes valaisannes, vol. 2. Du Col de Collon au Col du Théodule. Traduit de l'allemand, révisé et complété par A. Wöhrlich. Publication du C.A.S. 6½ x 4: pp. xxvii, 374: ill.
- Lausanne, etc., Payot, 1922
- Edwards, Walter M.** The Spirit of Adventure. Chancellor's Prize: Latin Verse. 7½ x 5: p. 7. Oxford, Blackwell, 1922. 2/-
- 'Nullus inest terris mons alta ad sidera surgens quin te, Calve, vocet.'
- Mount Everest Expedition.** In Geogr. Journ., vol. 59, no. 5. 9½ x 6: pp. 379-81. May 1922
- In Geogr. Journ., vol. 60, no. 1. 9½ x 6: pp. 67-71: map. July 1922
- In Geogr. Journ. London, vol. 60, no. 3. 9½ x 6: pp. 218-219: ill. September 1922
- The Expedition to Mt. Everest. In the N.Z. School Journal, vol. 16, nos. 1-2. 8 x 5½: pp. 26-32, 51-8: map, ill. Febr., March 1922
- Exhibition.** Mostra internazionale di alpinismo Torino 1922. Programma. 8 x 6: pp. 17-18.
- Ferrand, H.** La vallée de Chamouni et ses alentours dans la cartographie ancienne. Extr. Bull. Section de Géographie, 1921. 9½ x 6½: pp. 17. Paris, Imprimerie nationale 1922
- Contains reproductions of maps 1630, 1680, 1690.
- Frödin, G.** On the Analogies between the Scottish and Scandinavian Portions of the Caledonian Mountain Range. In Bull. Geol. Instit. University, Upsala, 18. 10½ x 6½: pp. 199-238: ill. 1922
- Ueber die Geologie der zentralschwedischen Hochgebirge. In Bull. Geol. Instit. University, Upsala, 18. 10½ x 6½: pp. 47-198: ill.: map. 1922
- Gaillard, Emile.** Les alpes de Savoie, 3. Les Massifs entre la Savoie et le Dauphiné. Guide pour l'alpiniste. 6½ x 4½: pp. 217: maps. Chambéry, Dardel, 1922
- Garden.** Notice of Gruen's alpine garden in Cincinnati. 1922
- Earth from Switzerland was transported for this garden.
- Gerber, E.** Ueber ältere Aaretal-Schotter zwischen Spiez u. Bern. S.A. Mitt.-Naturf. Ges. Bern, 1914. 9 x 6: pp. 37. Bern, Wyss, 1915

de Girard, Raymond. La conquête des Gastlosen. Publ. Section Moléson C.A.S. $9\frac{1}{2} \times 6$: pp. 81: plates. Genève, Atar (1921)

Hamilton, Helen. Mountain Madness. $7\frac{1}{2} \times 4\frac{1}{2}$: pp. (vii), 274: plates. London, etc. Collins, 1922. 8/6.

Ascents of Brévent, Charmoz, Tour Noire, Aig. du Midi, Grépon, Dent du Requin, Aig. Verte, Mont Blanc, crossing Aig. d'Argentières and Périades After an enthusiastic and often amusing description of ascents, the last sentence of the work is excellent, 'The lowly places of the earth are best, perhaps, after all!' A very readable book.

Hofmann, Egon. Hochturen im Parzinn. In Deuts. Alpenz. Jahrg. 18, Hft. 6. $12 \times 8\frac{1}{2}$: pp. 125-133: ill. 1922

Howard-Bury, C. K. Expédition du Mont-Everest. Séance Soc. de Géogr. 4 mai 1922. In La Géographie, Paris, vol. 38, no. 1. $10 \times 6\frac{1}{2}$: pp. 104-126: map, plates. Juin, 1922

— and others. Mount Everest. The Reconnaissance, 1921. $12\frac{1}{2} \times 9\frac{1}{2}$: pp. x, 356: maps, plates. London, Arnold, 1922. £5 5s.

This is no. 18 of large paper edition, 200 printed.

— Also ordinary edition. $10 \times 6\frac{1}{2}$: pp. x, 356: maps, plates. 25/-

Ittlinger, Josef. Führerloses Bergsteigen. Bibliothek für Sport und Spiel. $8 \times 5\frac{1}{2}$: pp. 301: ill. Leipzig u. Zürich, Grethlein (1922)

Der Alpinismus: Der Alpinist: Ausübung d. Alpinismus: Gefahren, Technik, Winterturen, Ausrüstung, Bekleidung, Ernährung, Literatur.

— Von Menschen, Bergen und anderen Dingen. $8 \times 5\frac{1}{2}$: pp. 322. München, Röl, 1922

— Führerloses Bergsteigen. Das Gehen auf Fels Schnee und Eis. $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 301: ill. Leipzig u. Zürich, Grethlein [1922]

The subjects in this handbook are:—Körperliche Eignung: Übungstüren für Anfänger: Notwendige Kenntnisse: Naturschutz: Hüttenbücher: Hilfeleistung: Notsignal: Allgemeines ü. d. Bergsteigen: Wegsuche: Sicherung d. Rückwegs: Pflichten: Veröffentlichungen: Die Alpen: Felsformen: Schnee u. Eis: Gletscher u. Moränen: Gefahren: Technik d. Bergsteigens: Fels- u. Klettertechnik: Schnee- u. Eistechnik: Winterturen u. Schutturen: Ausrüstung: Bekleidung: Ernährung: Karten u. Literatur: u.s.w. A handbook by a well-known climber.

Kephart, Horace. Camping and Woodcraft. A handbook for vocation campers and for travellers in the wilderness. 2 vols. in 1: $6\frac{1}{2} \times 4$: pp. 405, 479: ill. New York, Macmillan Co. 1922

A useful, complete handbook.

Kilimanjaro. Ascent 1921. In Geogr. Journ. *q.v.*, vol. 59, no. 5. $9\frac{1}{2} \times 6$: pp. 394-5. May 1922

C. Dundas, C. Gillman, P. Nason, F. J. Miller.

Klute, Fritz. Ergebnisse der Forschungen am Kilimanscharo 1912. 10×7 : pp. viii, 136: map, plates. Berlin, Reimer, 1920

An account of E. Oehler's expedition. The plates of the mountain are very good, and there is a large scale map—1/50,000—of both peaks of Kilimanjaro—Mawenzi and Kibo. The work deals with the climate, geology, and glaciers.

Kruck, Gustav. Die Klubbhütten der Sektion Uto S.A.C. $9 \times 5\frac{1}{2}$: pp. 112: plates. Zürich, 1922

Kurz, Fritz. Bergklänge. Gedichte. $6\frac{1}{2} \times 4\frac{1}{2}$: pp. 76. Wien, O.A.C. 1922

Was ich suchte in den Bergen: Licht und Freiheit, weites Schauen, Stille Freude, Selbstvertrauen, Kampf und einsam Gipfelglück.

Fand von allem, was ich suchte: doch das Beste, tief und wahr,

Ist Geschenk, denn hier wird klar mir des eignen Wesens Kern.

There are other verses the climber will like to read.

Kurz, K. F., u. Gurtner, Othmat. Zwischen Aare und Rhone. $7 \times 4\frac{1}{2}$: pp. 144. Bern, Pochon (1922)

Niesen, Eigergletscher, Tschingelhorn, etc.

- Lammer, E. G. Jungborn.** Bergfahrten und Höhengedanken eines einsamen Pfadsuchers. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 367: portr. Wien, O.A.C. 1922
Climbs, such as: Grossvenediger: Gr. Wiesbachhorn: Wildsp.: Thurwiesersp.: Matterhorn: Zinalrothorn: Weisshorn: Dent Blanche: Mönch: etc.
- Lancashire, M. E.** Problems connected with the Development of the Brenner Pass and Saddle. In Geogr. Teacher, London, vol. 9, no. 63. $10 \times 6\frac{1}{2}$: pp. 312-5. 1922
- Leberle.** Führer d. d. Wettersteingebirge. 4. Aufl. hsg. v. Herbert Kadner. 6×4 : pp. xx, 243: map. München, Lindauer, 1921
- Luther, C. J.** Der Skitourist. 2. Aufl. $6\frac{1}{2} \times 4\frac{1}{2}$: pp. 162: ill. München, Lindauer, 1921. M. 14
- Mayer-Pfannholz, Anton.** Deutsches Alpenland. Ein Heimatbuch. $8 \times 5\frac{1}{2}$: pp. xvi, 464: ill. Leipzig, Brandstetter, 1920. 4/6
An interesting anthology, prose and verse, on the Bavarian alps. Quotations from A. Dessauer, K. Stieler, M. Haushofer, L. Steub, H. Nosse—to choose some of those likely to be known to readers of alpine literature—and many others. The quotations are not directly connected with mountaineering, but are descriptive of mountain districts and of the mountain dwellers.
- La Montagna.** Settimanale d'alpinismo. Anno 1, num. 1-2. $12 \times 8\frac{1}{2}$: ill. Aprile 1922
- Morice, R. P. A. G.** L'abbé Petitot et les découvertes géographiques au Canada. In Bull. Soc. neuchât. de Géograph. t. 29. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 58. 1920
This contains a good deal of historic information from 1743 when the Lavérendryes reached the foot of the Rocky Mountains. There are also short notes on all Canadian explorations from 1585-1910.
- Mount Rainier.** First winter ascent Feb. 1922. In The Mountaineer, vol. 14, no. 6. May 1922
- Muirhead, Findlay.** Wales. The Blue Guides. $6\frac{1}{2} \times 4$: pp. lvi, 260: maps. London, Macmillan: Paris, Hachette, 1922. 7/6
A most excellent tourist guide-book, on the model of Baedeker.
- New Guinea.** Ascent from N. of Wilhelmina Top, 1921. In Geogr. Journ. q.v., vol. 59, no. 5. $9\frac{1}{2} \times 8$: p. 397. May 1922
- F. Nussbaum.** Das Moränengebiet d. diluvialen Aargletschers zwischen Thun und Bern. S.A. Naturf. Ges. Bern, 1921. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 45. Bern, Wyss, 1921
- Ostalpine Formenstudien** hsg. v. Dr. Fr. Levy. $10 \times 6\frac{1}{2}$. Berlin, Borntraeger, 1922. 13/-
Abt. 1, Hft. 2. Fr. Levy, Quartäre Formenentwicklung d. Schlierseer Berge u. ihrer Nachbarschaft. pp. 138.
Abt. 1, Hft. 3. Fr. Levy, Quartärstudien in d. Chiemgauer Bergen. pp. 80.
- P. L. M.** Various illustrated pamphlets on Savoy, etc. 1922
- Pope Plus XI.** Monte Rosa from Macugnaga, and the First Crossing of the Zumstein Sattel. Trans. from Boll. C.A.I., vol. 23, 1899, in Rev. of Reviews, London, no. 287, pp. 195-209: plates. March 15, 1922. 1/-
- Ricci, L.** Osservazioni geogr. nella catena Orobica. In l'Universo Firenze, vol. 3, no. 2. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 64-75: ill. Febr. 1922
- Siberia.** Explorations russes 1914-1921. In La Géographie, Paris, vol. 37, no. 1. $10 \times 6\frac{1}{2}$: pp. 58-62. Juin 1922
Mentions ascent of Belukha in 1914 by the Tronoff brothers.
- Thomson, J. M. A.** Climbing in the Ogwen District. Appendix containing accounts of many new climbs. By H. E. L. Porter. $6 \times 4\frac{1}{2}$: pp. 125-162. London, Arnold, 1921
- Turner, S.** The Conquest of the New Zealand Alps. $8\frac{1}{2} \times 5\frac{1}{2}$: pp. 291: plates. London, Unwin, 1922. 21/-
- Ward, F. Kingdon.** Glaciation of Chinese Tibet. In Geogr. Journ. vol. 59, no. 5. $9\frac{1}{2} \times 6$: pp. 363-70. May 1922
- W. D. Wilcox.** Valley of the Hidden Lakes. In Bull. Geogr. Soc. Phil., vol. 20. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. 61-9: ill. April-July 1922

- Wollaston, A. F. R. Natural History of South-Western Tibet. In Geogr. Journ., vol. 60, no. 1. $9\frac{1}{2} \times 6$: pp. 5-19: ill. July 1922
 Yamasaki, N. Glaciation of the Mountains of Japan. In Amer. Journ. Sc., New Haven, vol. 3, no. 203. $9\frac{1}{2} \times 5\frac{1}{2}$: pp. 131-137. Feb. 1922

Older Works.

- Davidson, G. C. The North-West Company. University of California publications in history, vol. vii. $9\frac{1}{2} \times 6\frac{1}{2}$: pp. xi, 349: maps. Berkeley, 1918
 This contains much detailed history of the early explorations of the Rocky Mountains of Canada, with many extracts from the writings of Alexander Mackenzie, David Thompson, and others, and reproductions of maps of the end of the 18th and the beginning of the 19th century: together with a bibliography of books, etc. When Mackenzie first saw the snow patches on the Rockies, he took them for talc. Similarly, when Kraff reported snow on Kilimanjaro, some critics thought he had seen chalk. The Indians called the snow patches 'spirit stones.' The notes on explorers, reports, and maps are very thorough.

- Festband Albrecht Penck. Zur Vollendung des 60. Lebensjahrs gewidmet v. seinen Schülern u. d. Verlagsbuchhandlung. 9×6 : pp. 458. Stuttgart, Engelhorn, 1918. M. 40

This contains the following articles of interest here:—pp. 36-40, H. Crammer, Berge d. Stadt Salzburg: pp. 40-7, E. Stummer, Umgebung d. Salzburg: pp. 67-92, J. Sölch, Eine Frage d. Talbildung: pp. 107-116, R. Lucerna, Morphologie d. Pastensenumgebung: pp. 257-286, G. Götzinger, Einige neuere Aufgaben d. Alpenseeforschung.

- Frossard, E. Vues dans les Pyrénées françaises, accompagnées d'un texte descriptive par E. Frossard. $19\frac{1}{2} \times 13$: pp. 44: 25 lithographs par J. Jourdan. Paris, Treuttel et Wurtz, 1829

- Talbot, Frederick A. The Making of a Great Canadian Railway. . . . Grand Trunk Pacific. $8 \times 5\frac{1}{2}$: pp. 349: plates. London, Seeley, Service, 1912

Maps.

- Mount Everest Photographic Survey. Preliminary map in three sheets—Everest (centre sheet). Dehra Dun, 1922
 ——— 1 in. to 1 mile. Centre sheet and East sheet (Makalu). Survey of India, 1922

- Western Survey. Sheets numbered I to IX covering whole of Westland and showing western and eastern sides of Alps from Harper's Pass to Aspiring. Scale, 1 mile to 1 in.

- N.Z. General Map. Lands and Survey Depart., Wellington.

ALPINE ACCIDENT.

MR. EDWARD BACKHOUSE, elected to this Club in 1904, and the young guide Thomas Biner, were the victims in August last of a fatal accident on the Leiterspitze. It is understood that Biner, who had been some days with Mr. Backhouse, had suggested taking a second guide for the expedition. Unfortunately, arrangements which, it is stated, were made with this object, miscarried, and the party proceeded on their way alone. Nothing more was heard of them until their bodies were observed below the Leiterspitze, having fallen, it is stated, from an easy place. When recovered the rope was intact.

There is nothing to show how the accident happened or whether a second guide would have prevented it. Statements, however, seem to agree that Mr. Backhouse was slow and tired easily, and it was, no doubt, this that led to the guide's demand.

NEW EXPEDITIONS.

Mont Blanc Group.

PETITS CHARMOZ (2868 m. = 9410 ft.), BY E. FACE. August 7, 1920.—Messrs. W. H. Lewin, R. A. Frazer, R. F. Stobart, and N. E. Odell, left Montanvert 08.20, going by Crête de Charmoz to Glacier de la Thendia. At 14.00 commenced climb on rock slabs 10 yds. S. of foot of couloir descending from Col de la Bûche. At 300 ft. up, crossed broken gully to left on to main slabs descending from summit ridge of Petits Charmoz. Climbed by groove for 700 ft. to gendarme to N. of Col de l'Étala, and finished on summit of Petits Charmoz at 17.45.

This route seems to differ from that on this face mentioned in the last edition of Kurz' Guide. It is a most delightful route on sound rock throughout, nowhere of outstanding difficulty, and it can be thoroughly recommended to competent rock-climbers as a good first day's expedition.

N. E. O.

Pennines.

POINTE SUD DES BOUQUETINS (3690 m. = 12,107 ft.), FROM THE WEST. September 9, 1921.—Miss D. E. Pilley, Mr. I. A. Richards and Joseph Georges le Skieur, the youngest of the Arolla guides. Left Arolla at 3.15 A.M. On the Arolla glacier exceedingly cold wind, tea being frozen inside the sacks. From the summit an arête descends due W., its foot forming a tongue-like promontory in the little glacier to the N. of the point 3096. The lower reaches of this arête consist of boulders and decayed rock at an easy angle and are not attractive. Higher up matters improve. Where the arête steepens and merges into the final wall of the peak, the couloir-chimney on the right was taken (faintly visible on Mr. Topham's photograph, 'A.J.' xx. 110). It is probably the chimney which defeated him and Jean Maître in 1892 (or 1894 ?). Its length must be between 400 and 500 ft. and much verglas overlaid with poor snow demanded continuous climbing of exceptional difficulty. The hardest passage occurs near the top.

From the col so reached the summit was easily gained (3 P.M.). The descent was made from the col immediately to the N. of the summit in a direct line to the Za de Zan glacier, thus being to the S. of Mr. Topham's route in the first ascent. This wall of rocks proved overmuch vertiginous, it being rarely possible, when looking down, to see more than 20 ft. of the rocks ahead owing to overhangs. A 'corde de rappel' of 120 ft. was used on three occasions (doubled). As the rock is unsound in most places this line of descent cannot be recommended. There appears to be but one point at which the glacier can be attained without great difficulty (marked

on photograph facing 'A.J.' xx. 113). This was reached after dark, 9.0 P.M., as a violent snowstorm began. Joseph Georges' unhesitating return over the Col des Bouquetins, new to the whole party, was a fine performance. Cabane de Bertol 11 P.M.

The climbing possibilities of this Cabane seem hardly realised. The following excursions made in the week preceding this ascent will indicate its scope :

L'Évêque : a charming and strangely neglected mountain.

Arête des Douves Blanches. This, if all the gendarmes are climbed direct as was done, it is believed for the first time, on this occasion, gives climbing not easily matched for interest, soundness, difficulty or impressive situations. Times (for two climbing quickly)—Hut, 11.30. Arête, just above great grey slab, 12.30. Summit, 2.45. Hut, 4.

Dent Blanche, Ferpècle Arête.—Hut, 2.30 A.M. Foot of great couloir, 7.35. Summit, 1.5 P.M. Moderate pace. Ascent by this route is much to be preferred to a descent, owing to falling matter.

AIGUILLE DE ZALLION (c. 3600 m. = 11,808 ft.), BY W. RIDGE. August 14, 1922. Messrs. R. L. G. Irving and H. E. G. Tyndale.—The name Aiguille de Zallion is suggested for want of a better to indicate a very sharp little summit N. of the Za on the main Za-Perroc ridge. Dr. Dübi's new guide is difficult to follow here. From N. to S. the ridge is Perroc 3680 m., Pte. des Gênois 3679, then a big drop and a gentle rise to the broad hump of the Dent de Zallion 3518 m., then a slight drop to the Col de Zallion about 3400 m., then a gradual rise to an unnamed point (over 3600 m., my Aiguille de Zallion), then the Za itself. The Col de Zallion is described as between the Dent de Zallion and the Za, but the text suggests that the point I have called Aiguille de Zallion is the S. summit of the Dent de Zallion (a W. ridge of which was ascended by Miss Wood and two guides in 1897), though it has no connexion with the latter, being separated from it by the wide gap of the Col de Zallion.

My reason for giving these minor topographical details is that an admirable rock ridge, quite 2000 m. in height, descends from the Aiguille de Zallion to the small Za glacier. No information about it is in Larden's guide or the climbing book at Arolla, and we could find no traces of previous ascents on the rocks. It gave us a capital climb of 5 hrs. with plenty of route-finding and the possibility of being turned back almost to the end. It is longer than the W. face of the Za as the ridge starts lower, the rocks are very good, there is practically no shale on it, and it is one of the few ways of reaching the main ridge from the Arolla side that is absolutely safe from stones. One is on or near the edge overlooking the couloir N. of the Za the whole time. In the upper part we ran out 80 ft. in a steep smooth chimney to regain the ridge, but the climb is interesting rather than difficult. I thought it a better

climb than the face of the Za, and it is astonishing that such an expedition just above a centre like Arolla should be practically unknown. The final summit is small and elegant and is easily reached from the glacier on the E., which comes up to the main ridge just at this point. An easy and leisurely descent by the N. Col de Bertol takes one back to the hotel in about three hours.

R. L. G. IRVING.

MONT COLLON (3644 m. = 11,956 ft.). FIRST ASCENT BY THE W.N.W. ARÊTE, July 23, 1921. M. Myrtil Schwartz with Joseph



Georges de Martin and Joseph Georges le Skieur. The party left Arolla at 2 A.M., and followed the glacier to the foot of the rocks of the N. face (5 A.M.). These rocks are below and to the right of the arête, and are much water-worn and exposed to stones. The arête was gained in $1\frac{1}{2}$ hours' anxious climbing, and is described as very loose and difficult. To the foot of the final ice-wall took $7\frac{1}{2}$ hours, or 9 hours from the foot of the rocks. The ice-wall is about 200 m. long, its angle 60° and finally 75° , and required $3\frac{1}{2}$ hours, steady cutting in hard ice, the final snow-cap being reached at 6 P.M. The hotel was regained at 2 A.M. The second-named guide appears to have led throughout, while the first guarded the Monsieur. (*Alpina*, August 1921.)



Photo, V. A. Flynn

VICTORIA,
N.E. face from E. ridge of N. peak.
(Details of route).



Photo, V. A. Flynn.

VICTORIA.
(Author's route)

Canadian Rockies.

MT. VICTORIA (11,355 ft.). FIRST ASCENT BY N.E. FACE. July 15, 1922. Mr. V. A. Fynn with Rudolph Aemmer.—The glacier-clad N.E. face of Mt. Victoria, 11,355 ft., faces the Château Hotel at a distance of some six miles and towers nearly 6000 ft. above Lake Louise. Some four years ago I, with Rudolph Aemmer of Interlaken, made a first attempt to reach the main peak directly over this face, but we did not get any farther than the breakfast place on the upper Victoria glacier. Threatening weather caused us to turn back and defeated us on three subsequent attempts. On one of these we advanced as far as the last wall, which is about 1600 ft. high with an average inclination of a little more than 50°, but were driven back by stones dislodged by the high wind.

On July 15, 1922, the same party left the Château at 12.10 A.M., reached the breakfast place on the upper Victoria Glacier at 3.10 A.M., by lantern light, and the foot of the final wall at 5.25 A.M. The upper Victoria Glacier proved to be in good condition and progress to the foot of the last slope was easy and rapid. A bergschrund guards the approach to the last wall, it is followed by a steep ice slope, then a belt of the much disliked black rock, above which another ice slope leads to the summit. This last slope is occasionally interrupted by mostly loose outcrops of grey-yellow and brittle rock. The summit ridge, near the main summit, is formed by another layer of the black rock. The bergschrund was easily crossed just below the main summit, but the following ice slope was covered with deep powdery snow which all but defeated us. A hard, 2-in. thick crust was all that enabled us to negotiate this nasty bit. All protruding rocks were glazed and very treacherous. Rudolph led with great discrimination and 1½ hrs. later the first black belt was behind us. Relieving my friend we struck straight for the summit, utilising the protruding rocks when possible and cutting in between. At 10 A.M. we were within 600 ft. of the summit and Rudolph again went to the fore. An attempt to continue our line yielded an advance of 25 yds. in 1 hr. 10 min. The slope immediately above seemed to bulge as we advanced. This great steepness and the considerable amount of half-frozen snow made it necessary to cut deep, and we finally decided to gain time by changing our line. Going back 25 yds. we traversed N. along the very steep ice slope until the bulge was passed, then striking up again we reached the summit ridge at 1 P.M. just where the first rocks show. After a quarter of an hour's rest, 20 min. more of easy going S. saw us on the main peak. Leaving the summit at 2 P.M., the main ridge was followed S. for 50 min., after which we took to the S.W. face in a snowstorm and so on to Lake O'Hara at 6 P.M.

If anyone ever finds good snow on this face the ascent will not be found difficult. Failing good snow the expedition requires a

good deal of effort. The greatest care will always be necessary because of the steepness and the lack of reliable anchorage.

(See *Illustrations*.)

VAL. A. FYNN.

[Cf. Mr. Fynn's art. A.J. xxxii. 305 *seq.* on the photograph opp. p. 303, the S. peak is wrongly marked. It is the flat summit, $1\frac{1}{4}$ inch from the left-hand edge.]

VARIOUS EXPEDITIONS IN 1922.

Pennines.

DENT D'HÉRENS (4180 m. = 13,715 ft.), DESCENT BY THE MONT TABEL GLACIER. August 13, 1922. Messrs. R. S. T. Chorley, M. H. Wilson and R. B. Graham, with Joseph Georges (de Pierre) of Arolla. 1.45 A.M.—Start from Rifugio d'Aosta. 1.45–6.25.—Ascent of Dent d'Hérens (including one halt of 20 minutes). 6.50–9.10.—Descent by rocks to Col des Grandes Murailles. 9.30–10.30.—Descent to ice-slope at head of Mont Tabel Glacier. 12.0.—First ice-fall of glacier reached. 12.0–2.50. P.M.—Descent of three ice-falls. 3.45—Hotel Mt. Cervin, Breuil.

The ascent on the W. side was assisted by a good moon and by crampons, which helped progress on the glacier and on the slope below the summit.

The descent to the Col des Grandes Murailles is by an imposing ridge running out a little S. of S.W. from the top. From above, therefore, whence it is not very easy to see the ridge, it will be found somewhat to the right of the direction of the Murailles. The biggest of its numerous gendarmes is high up, and forms the culminating point of a subsidiary ridge on the right or W. side. Our route lay to the top of this gendarme and down the subsidiary ridge, so as to avoid the direct descent. We did not return to the main ridge till several gendarmes had been passed. The W. face, on which we were, is less steep than the S., and although the rocks dip the wrong way for regaining the ridge from this side, a suitable traverse was finally found by the guide. The S. face might give a more interesting, but probably not a more rapid, way of turning the gendarmes. When we returned to the ridge, we were low enough to go straight across it and down on the other side to the snow, which we touched at about the level of the Col des Grandes Murailles. It will be seen that the actual ridge was not used for more than a very small part of the way.

(The Siegfried map is at this point difficult to understand. It appears to mark a snow-slope right to the summit of the Dent d'Hérens from the S. and S.E. sides. To me the whole southern face seemed to be rock. A wide tongue of snow, the highest part

of the morning's glacier, runs upwards to the left of our route of descent; we crossed it at right angles at a point where my recollection would make it a quarter of a mile or so across. At the top it crowns a steep rock face, looking E., as we saw the next day from the Matterhorn. The mountain stands out above this tongue as a pyramid, the side of which facing the Col des Grandes Murailles appeared mainly steep rock, while between it and the E. frontier-ridge there is some snow.)

From the Col des Grandes Murailles (point 3869), there is at first an ill-defined ridge of poor slaty rock, and shortly afterwards the rock-face becomes steeper. Here we kept to the right, close to a couloir. The couloir, however, has an overhang just at the point where the face beside it steepens, and some careful climbing was needed. We kept down the rocks beside the couloir, which joins the ice-slope below at its N.W. angle. (This ice-slope, square-topped, and other details of this glacier, are clearly shown on the newest Siegfried map.)

On the ice-slope we descended at first directly: then came a rather lively half-hour (it was 11 A.M.) with falling stones from the couloir above and the rocks on both sides of it. We finally got to cover under steep rocks on the right. Here the bergschrund was not difficult: indeed, it could probably be crossed at many points. The line of it, however, goes right across the foot of the ice-slope.

The Mont Tabel Glacier is steep and has three ice-falls, all of which have to be passed near the right wall. The passage of the first is in two stages: we first cut down an ice-wall of ordinary difficulty, and then raced over a bridge made by avalanches from the Punta Margherita. The second was passed in a sort of gully close to the rock, under the principal stone-shoot of the Punta des Cors. Apart from the danger of stones, there was no particular difficulty. The only feasible route lies well to the right. Crampons made the descent both faster and safer.

The lowest ice-fall actually required the most cutting of steps and took the longest time of the three. It was free from falling stones, and the climb ended peacefully.

Joseph Georges (son of Pierre: there are two guides of the name in Arolla) had done no part of the descent before, and showed considerable skill in finding the way, as well as in the other branches of his art. He is a man of thirty, whose career has been seriously interfered with by the war; being most anxious to make up for lost time, he welcomed such expeditions as this and the following one (which was, in fact, undertaken at his suggestion).

R. B. G.

[The Mont Tabel Glacier can often be difficult, at times impassable, always dangerous from stones. The way down from the summit to the Col des G.M. is not easy to find. No difficulty has been hitherto reported from the col to the glacier: one keeps on

the rocks on the left of and close to the couloir. Times of a previous party (1903) were: Summit to Col des G.M. 2 hours 13 minutes, head of glacier 49 minutes, off glacier 2 hours 20 minutes, Peraldo's Hotel 1 hour 5 minutes (2.28 P.M. to 8.55 P.M., no halts). Glacier was abominable, a bad Guggi.]

DENT BLANCHE (4364 m. = 14,318 ft.), ASCENT FROM COL DE ZINAL. August 18, 1922. Messrs. R. S. T. Chorley, M. H. Wilson, R. B. Graham, with Joseph Georges (de Pierre) of Arolla.—12.50 A.M.—Start from Schönbühl Hut. 3.10 A.M.—To Col de Zinal (or 'Col de la Pointe de Z.'). 3.40 A.M.—12.47 P.M.—To summit by Viereselsgrat (two short halts: route from Mountet joined at 10 o'clock). 1.40–7.5 P.M.—By S. Ridge to Bertol Hut.

The rocks of the Col de Zinal were climbed on the left, after an approach well to the right on the glacier. The bergschrund was sealed on the left side and the rocks easy though rotten.

From the col we kept somewhat to the Zinal side of what seemed, by the light of a waning moon, to be a rather spreading ridge. The rocks were unsound and fairly steep. The ridge sharpens gradually. Most of the gendarmes below the Red Tower (where the ridge bends westwards) and the Red Tower itself were turned on the left or S.W. side, steps under an ice-bulge being necessary at one point. There were also on the ridge short stretches of hard snow, two of which went best *d cheval*, but nothing of special difficulty. At no point in the ascent was either bare ice-ridge or more than miniature cornice encountered. High up, after the junction with the Viereselsgrat proper, there was powdery snow on the N. side. This must have fallen on the 15th and on the evening of the 14th, the only recent bad weather.

The first big gendarmes after the junction were turned on the N. side and presented some little difficulty on account of this new snow. Very few indeed of the gendarmes had to be taken direct. I remember only one for certain. The snow on the actual ridge at these high levels was just sound enough to help us. It let a member of the party down at one point with a leg on each side of the harder material below, and on the sharper pieces of the ridge the going required a good deal of care. Very few steps, however, needed to be cut.

Under the favourable conditions of the day the impressions left by the whole climb from the Col de Zinal were of the length, the variety, and the persistently high standard of the ridge, rather than of any places of peculiar difficulty.

The ascent was another testing expedition for Joseph Georges, as this too was largely an unseen climb for him. He came through it admirably. He had been, previously, with a second guide, a porter and one Monsieur to within sight of the Red Tower: here the Monsieur, he explained, had become *malade*, and they had had to return. Hence Joseph's desire to do the climb!

We were on the top in just under twelve hours from the Schönbühl, and the descent to the Bertol was made by the ordinary route.

R. B. G.

Bernese Oberland.

BIETSCHHORN (3953 m. = 12,969 ft.), BY THE S. FACE (4TH ASCENT). July 2, 1922. Herren H. Lauper and W. Richardet, A.A.C., Bern.—Bivouac at Jägisand, 1800 m. Then in four hours to the N.E. corner of the strip of glacier at the foot of the S. face, where the climb starts. The Maquignaz-Farrar route of 1893 ('A.J.' xviii. 477) was then followed very closely, except that the party, after gaining No. 3 couloir, returned to No. 2 couloir, and only gained No. 4, or final couloir, much higher up.

This is certainly no improvement, for it is obviously desirable to finish with the three narrow couloirs, 1 to 3, as quickly as possible and gain the No. 4 broad couloir, in which the snow would soften more quickly and hence check the pace of any stones, while offering more chance of avoiding them. Moreover, more than one place, brilliantly climbed by M. Richardet, was exposed and difficult. Time from Einstieg to summit, 6 hours 12 minutes against 5 hours 36 minutes of the 1893 party. Herr Lauper found considerable snow in the couloirs, but the rocks were dry. He saw no stones fall, and recommends the climb rather warmly. It must be borne in mind, however, that competent mountaineers like Alex. Burgener and Purtscheller were much endangered by stones, while a strong party (Sir Edward Davidson's) in 1895 was forced to retreat for the same reason. It is only in the conditions encountered by the 1893 and 1922 parties, viz., some snow in the couloirs, dry rocks and no wind, that this S. face, on which four steep couloirs have to be crossed or followed, will be fairly safe. 'Alpina,' August 15, 1922 (illustrated), and Herr Lauper's letter, July 11, 1922.

ALPINE NOTES.

HIS HOLINESS THE POPE has presented a gold medal to the members of the Everest expedition.

'BALL'S ALPINE GUIDE,' THE WESTERN ALPS.—A new edition (1898) of this work, reconstructed and revised on behalf of the Alpine Club by the Rev. W. A. B. Coolidge, Fellow of Magdalen College, Oxford, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It covers the Western Alps from the Mediterranean to the Simplon, S. of the Rhone. Price 13s. net, post free 13s. 8d. net.

'BALL'S ALPINE GUIDE,' THE CENTRAL ALPS. PART I.—A new edition (1907) of this work, reconstructed and revised on behalf of the Alpine Club under the general editorship of the Rev. A. V. Valentine-Richards, Fellow of Christ's College, Cambridge, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C. 2. It includes those portions of Switzerland to the N. of the Rhone and Rhine Valleys. Price 7s. 6d. net, post free 7s. 11d. net.

'BALL'S ALPINE GUIDE,' THE CENTRAL ALPS. PART II.—A new edition (1911) of this work, reconstructed and revised on behalf of the Alpine Club under the general editorship of the Rev. George Broke, can be obtained from all booksellers, or from Edward Stanford, Limited, 12 Long Acre, W.C.2. It includes those Alpine portions of Switzerland, Italy, and Austria which lie S. and E. of the Rhone and Rhine, S. of the Arlberg, and W. of the Adige. Price 8s. 6d. net, post free 9s. net.

MAP OF THE VALSESIA.—Some copies of the Map issued with the ALPINE JOURNAL, No. 209, and of the plates opposite pages 108 and 128 in No. 208, are available and can be obtained from the Assistant Secretary, Alpine Club, 23 Savile Row, W. Price for the set (the Map mounted on cloth), 3s.

THE 'GUIDE DES ALPES VALAISANNES.'—Vol. II., from the Col de Collon to the Théodule, edited by Dr. Dübi. The French edition, thoroughly revised and with the route-marked illustrations, can now be obtained from Albert Kündig, Geneva.

THE 'CLUBFÜHRER DURCH DIE BÜNDNERALPEN.'—Vol. IV., covering the Bregaglia and the Disgrazia group, by H. Rütter, with the assistance of Christian Klucker, can be obtained from Sauerländer and Co., Aarau, Switzerland.

THE ALPINE CLUB OBITUARY :

	Date of Election.
Tucker, C. C.	1866
Prothero, Sir G. W., K.B.E., Litt.D.	1874
Bayfield, Rev. M. A.	1877
Tuck, Rev. Francis J.	1882
Gatty, V. H.	1894
Symons, H.	1903
Backhouse, Edward	1904
Lucas, F. G., Brig-Gen., C.B. etc.	1908
Monaco, H.S.H. The Prince of (Hon. Mem.)	1921

WE much regret to note the death of MR. WILLIAM LEIGHTON JORDAN at the age of 85. Mr. Jordan will be remembered for an attempt of the E. face and an ascent of the Italian face of

the Matterhorn in 1867, a description of which he contributed to the *JOURNAL*, vol. xxx. 316 *seq.* He was the donor of the original Echelle Jordan. He was a man of great physical strength and energy, which he retained to the end. His interests were very varied, and he had travelled widely.

WE regret to learn that DR. HANS BIEHLY of Kandersteg was killed on August 3 in a motor accident. Only a few days previously he had been foremost in the attempted relief of the victims of the Doldenhorn accident. He was an experienced and indefatigable mountaineer, and made, in 1898, with Heinrich Burgener, the ascent of the Weisshorn, when the N. arête was followed throughout for the first time.

WE regret to note the death at the age of 86 of M. ERNEST SOLVAY, the well-known Belgian chemist. He was an ardent mountaineer, although it was only in later life that he found time for much climbing. He ascended the Cervin and Monte Rosa in his 72nd year, and the Grépon three years later, while at 83 he reached the summit of the Punta Margherita. Mountaineers owe to him the gift of the Solvay refuge hut on the Cervin. During the German occupation he was president of the Comité National de Secours, which was indefatigable in the relief of his necessitous countrymen.

THE death is announced at the age of 75 of M. PAUL JOANNE, one of the founders of the C.A.F.

PIERRE CHRISTOPHE TURC, the well-known Dauphiné guide of Les Étages, met with a fatal accident on October 23, 1921. While ascending during the night to the Alpe de Venosc he missed the path and fell into the gorge, fracturing his skull. He was born in 1854, but only took to guiding when already 35, Mr. Bradby being one of the first Englishmen to give him a start by taking him for a single-handed traverse of the Meije. He was a sturdy, good-tempered little man.

NIKLAUS BRANTSCHEN (1885-1921), of St. Niklaus—one of the best of the younger guides—died, aged 36, on August 21, 1921, at the Interlaken hospital, of acute peritonitis, which came on during an ascent of Wetterhorn the same day. He was one of Mr. Young's discoveries, and his first expedition as guide was the Teufelsgrat with the late Mr. Symons ('A.J.' xxv. 111). He was for some seasons with Mr. Broome, whom, single-handed, he led up the E. face of Nordend. His other expeditions included the N. face of Weisshorn, with Miss Cottie Sanders, her brother, and Christian Kaufmann, the N.E. arête of Bruneggorn, and all the more difficult Zermatt routes. He also knew Chamonix and the Oberland. He leaves a wife and eight young children poorly provided for.

DE SAUSSURE AND DOLOMIEU.—A work recently published at Paris ('Déodat Dolomieu—sa correspondance—sa vie aventureuse—sa captivité—ses œuvres,' par A. Lacroix, Secrétaire perpétuel de l'Académie des Sciences. Paris: Perrin et Cie. 1921. 2 vols.) throws fresh light on the relations between de Saussure and Dolomieu, and gives for the first time an exact account of the circumstances in which the term 'dolomite' first came into use.

The correspondence edited by M. Lacroix shows that the relations between the two eminent geologists were of the most cordial character, that in science Dolomieu looked on de Saussure as his master, and that he did his best to find him a post at Paris after his loss of fortune.

The first person to use the term 'dolomite' for the magnesian limestone which constitutes the peaks of Southern Tyrol was Théodore de Saussure. Dolomieu had, in 1791, sent him a specimen of the rock for the purpose of a chemical analysis. Théodore, in replying, asked what name Dolomieu wished to give it. Dolomieu wrote that he should have liked to name it after Théodore's father, H. B. de Saussure, had he thought the tribute adequate to its object. Thereon, in an article in the *Journal de Physique* (vol. xl. p. 167), Théodore designated the new rock by the name it has since borne, 'dolomie.' For its use in this country as the designation of a considerable alpine region, Gilbert and Churchill, the authors of 'The Dolomite Mountains,' are chiefly responsible. On the last pages of that work a sketch of Dolomieu's singularly picturesque and romantic career will be found. M. Lacroix' work largely fills in the details, and is a valuable contribution to the scientific annals of the end of the eighteenth century. It fully bears out the estimate formed by Mr. Freshfield ('Life of de Saussure,' 1920) of the group of savants resident at Geneva at that date.

SULDEN IN 1922.—The village itself suffered no damage during the War. The summit of the Ortler was occupied by an Austrian detachment, the Cevedale by the Italians. The Hallesche, Schaubach, Baeckmann and Hochjoch huts were all destroyed. A new hut has been built on the Hintergrat by the Sulden guides and accommodation arranged in the ruins of Schaubach. The other huts are intact. The guides Hans Sepp Pinggera, his brother Franz and the Dangls were delighted to see Englishmen again. The Sulden hotel, under Mr. Reinstadler's capable management, is thoroughly good. Pension about L 60. Hardly any English—many elegant Italians. The mountain tariffs are now four times the former, but reckoned in lire; thus the Ortler, formerly K 20, is now L 80. Leaving Sulden by the first autobus, provided it reaches Spondinig a bit before time, which can be judiciously arranged, one can catch the Ofen Pass auto via Glurns, take train at Zernetz and reach Bâle by 11 p.m. The Ofen Pass route is well worth seeing. Passport difficulties we had none. The Italians scrutinised our passports courteously but narrowly at the last Italian post in the

Ofenthal, while we were welcomed with jovial friendliness at the first Swiss post! The Italian autobuses are moderate—the drivers perfect demons. The Swiss autobuses are solidly first-rate and the drivers eminently respectable. They, anyway, will not break your neck—and the Italians never seem to do so. J. P. F.

VISITORS TO THE HUTS OF THE S.A.C. IN 1921.—

Bétemps	752	Konkordia	808
Matterhorn Inn . .	351	Finsteraarhorn . .	482
Schönbühl	800	Strahlegg	392
Dom	174	Gleckstein	822
Weisshorn	92	Rotondo	583
Mountet	234	Ruckhubel	938
Bertol	660	Etzli	805
Chanrion	450	Hüfi	892
Panossière	290	Clariden	1058
Orny	1129	Fridolin	485
J. Dupuis	871	Boval	1407
Britannia	790	Tschierva	750
Solvay	—	Albigna	179
Blümlisalp	2110	Sciora	102
Gspaltenhorn . . .	674	Cadlimo	871
Mutthorn	1547	Forno	308
Oberaletsch	151	Total to all huts .	44,233

SCHWEIZER ALPEN-CLUB'S ACCOUNTS.—

	1920	1921
Expenditure on new huts, repairs, etc. .	Fr.51,905	Fr.42,649
„ „ Jahrbuch, vol. 54 and 55	115,540	93,281
„ „ Alpina	42,721	67,882
Total expenses excluding Jahrbuch . .	170,600	184,962
„ receipts „ „	125,742	193,571
New members	3,162	2,463
Total „	20,475	22,300

COL D'ISÉLAN.—The C.A.F., in conjunction with the P.L.M. and the T.C.F., contemplate building on the Col, over which a road is now being made, a good mountain hotel.

The TEMPLE DE LA NATURE (adjoining the Montanvert Hotel), which is among the very earliest of mountain refuges, is to be restored and to be safeguarded as a 'Monument historique.' See photograph opposite p. 16 of 'The Annals of Mont Blanc,' by C. E. Matthews.

WE much regret to learn that M. HENRI FERRAND, our Honorary Member, is suffering severely from a weak heart which, it is to be feared, may greatly impede his mountain activities.

THE DENT DU MIDI.—M. Boissonnas, the well-known Genevese photographer, is engaged on a monograph to which Mr. H. F. Montagnier is contributing.

THE section ALPES MARITIMES DU C.A.F., under the energetic Presidency of our Hon. Member, M. le Chevalier de Cessole, continues its splendid work among the young people of Nice, 33 'caravanes scolaires,' with 538 participants, having made expeditions during 1921.

LE REFUGE D'AVÉROLE has just been erected by the C.A.F. in the Avérole glen (Levanna district).

MAPS OF THE TARENTEISE.—The French Service Géographique is busy on the fine 1:50,000 coloured maps. The following sheets are announced: Bourg-St. Maurice, Petit St. Bernard, Tignes (issued), Modane, Lanslebourg, Mont Thabor, Mont d'Ambin.

At present the most convenient maps are those in Mr. Coolidge's 'Ball's Western Alps,' which is as indispensable to travellers as when it was issued twenty-four years ago.

RHINE-RHÔNE WATERWAY.—A waterway across Switzerland, connecting the Rhône with the Rhine through the Lakes of Geneva, Neuchâtel, and Bienne, is proposed.

From near Bellegarde four dams coupled with locks would enable 700-ton barges to reach the Lake of Geneva. This section would cost at least 200,000,000fr. (£8,000,000). A canal 23 miles long would connect the Lake of Geneva with the Lake of Neuchâtel. A series of thirty locks would raise this canal to a height of nearly 200 ft., and then bring it down some 50 ft. to the Lake of Neuchâtel. This section would cost nearly 168,000,000fr. (£6,720,000). After passing through the Lakes of Neuchâtel and Bienne, the waterway would run along the Aar and enter the Rhine at Felsenau. This section would cost about 24,000,000fr. (about £960,000). Marseilles, Basel, and Rotterdam would thus be connected by an important inland water route.

THE CHAMONIX—AIG. DU MIDI AERIAL LINE.—A well-known London evening paper states that 'Tourists will in the near future be able to reach the top of Mont Blanc within ninety minutes of starting on their journey. . . . The actual summit of Mont Blanc is only about three thousand feet higher, and can be reached from the future railway terminus on the summit of the Aiguille du Midi by an easy stroll over the ice, without any danger. This final stage of the journey can be accomplished by tourists who are not accustomed to Alpine climbing, without the aid of guides and porters, since there are no crevasses near the summit.'

THE OXFORD MOUNTAINEERING CLUB was represented in the Alps by a party of 12 members, including their president, Mr. H. R. C. Carr. From Val d'Isère they crossed the Col de Galise, spent a week at the Victor Emmanuel Hut—weather pretty foul—then from Courmayeur to Chamonix by the Col du Géant. All the members had had experience of British mountains, and some had done walking tours in the Alps, but the glacier work was in general a novelty. It is to be hoped that these meets will be continued. There can be no sounder way of extending one's mountain education, and there are in the Club men, like its president, who are competent judges of the capacities of the various members, and can direct them accordingly.

H.M. THE KING OF THE BELGIANS, with the guides A. and M. Ferrier, ascended the S. Aig. d'Arves in August 1921. The intended ascent of the Meije was stopped by bad weather.

THE LATE LORD BRYCE.—It was in the 'seventies, at the Annual Dinner of the Alpine Club in Willis' Rooms, that I heard Lord Bryce respond for the visitors, as he was not then a member. It was shortly after his ascent of Ararat, and, in referring to it in the same humorous way described by Mr. Freshfield, he observed that Noah ought to be the patron saint of the Alpine Club, as his ascent of Ararat was the first recorded ascent of a great mountain, though it might be said that he ascended it in a kind of floating chaise-à-porteur; that if any doubt was felt as to the authenticity of Noah's ascent, he could only say that he found some wood high up on Ararat which bore unmistakable evidence of long exposure to weather, and which he was not prepared to say might not be gopherwood!

ARTHUR A. PEARSON,
Formerly member of the A.C. (elected 1877).

WORDSWORTH ON PFYFFER'S RELIEF OF THE NEIGHBOURHOOD OF THE LAKE OF LUCERNE.—In my *Life of de Saussure*, p. 164, reference is made to a relief by a M. Pfyffer of the mountains round the Lake of Lucerne, the inspection of which de Saussure says 'gave him pleasure comparable to that he had enjoyed from the panorama of the Grammont and Mt. Blanc.' Such a statement from one who was as a rule moderate in his praise, I must confess, surprised me not a little. I was interested, therefore, when the other day, in Wordsworth's 'Description of the Scenery of the Lakes in the North of England' (London: Longmans, 1823, p. 1), I came across a passage which shows that de Saussure had at least some grounds, besides friendship for his host, the constructor, for his enthusiasm.

The passage is as follows: 'At Lucerne in Switzerland is shown a Model of the Alpine country which encompasses the Lake of

the Four Cantons. The spectator ascends a little platform and sees mountains, lakes, glaciers, rivers, woods, waterfalls, and vallies with their cottages, and every other object contained in them, lying at his feet; all things being represented in their appropriate colours. It may easily be conceived that this exhibition provides an exquisite delight to the imagination, tempting it to wander at will from valley to valley, from mountain to mountain, through the deepest recesses of the Alps. But it supplies also a more substantial pleasure: for the sublime and beautiful region with all its hidden treasures, and their bearings and relations to each other, is thereby comprehended and understood at once.'

D. W. F.

UNCLIMBED PEAKS IN THE CANADIAN ROCKIES.—Mr. A. O. Wheeler, Director of the A.C. of C., gives the following list:

At the source of the Athabaska River—Mt. Alberta, 11,874 ft.; Collie's Twins, North Twin, 12,085 ft., South Twin, 11,675 ft.; Mt. Columbia by N. face, 12,294 ft.; Mt. King Edward, 11,400 ft.; all can be reached from a camp at head of the Athabaska River.

At E. end of Fortress Lake—Fortress Mt., 9908 ft.; Mt. Quincy, 10,400 ft.; Mt. Dias, 10,612 ft.

At W. end of Fortress Lake—Mt. Clémenceau, 12,001 ft.; Ghost Mt., 10,512 ft.

At Athabaska Pass—Mt. Hooker, 10,782 ft.

On Whirlpool River—Mt. Fryatt, 11,026 ft.; Mt. Scott, 10,826 ft.; Needle Peak, 9668 ft.

At Tonquin Valley and Pass—Mt. Geikie, 10,854 ft.; the peaks of the Geikie Range, and Mt. Fraser, 10,726 ft.

Mt. Geikie, the peaks of the Geikie Range, and Needle Peak may be expected to give some work.

'GUIDE DES ALPES VALAISANNES.' VOL. I.—'FROM THE COL FERRET TO THE COL DE COLLON.'—M. Marcel Kurz, A.C. of Neuchâtel, is engaged on the new edition (based, of course, on the Coolidge-Conway 'Climbers' Guide'), and would be grateful for any unpublished information, especially on the Grand Combin district. He desires further information of an ascent of the Combin 'par les rochers de la Tour de Boussine' made by a Mr. H. Ledebur *de Londres* (Boll. C.A.I. xl. 176).

M. LE COMMANDANT E. GAILLARD, M.C., Villa Pétiot, Uriage les Bains, France, is engaged on vol. vi. of his 'Les Alpes de Savoie,' of which vol. iii. is noticed elsewhere. Vol. vi. is to deal with the history of the exploration of the Group. He would be grateful to English mountaineers for any *unpublished* information.

MONTE MORO.—Travellers are now allowed to cross this pass into Italy, but may expect to be escorted by a gendarme to the highest village for verification of passport.

PIERRE MENTA.—Reverting to Mr. Powell's paper, p. 258 *seq.*, he now learns that the ascent was made on July 8 by MM. J. P. Loustalot and Zwingelstein of the C.A.F. The climb starts on the top of the buttress forming the lower third of the centre of the N.W. face (see left picture, opposite p. 260), then a chimney, fairly easy, of about 25 m. (piton fixed at top), followed by a smooth slab about 7 m., then by a short traverse to left (most difficult bit), and then by a grass-lined chimney (piton fixed near top). On the descent the climbers followed the line of ascent for half the way, and then let themselves down a nearly vertical wall of 15 m., more to the right (descending), to regain the top of the buttress. The ascent took one hour.

M. Loustalot puts the height of the wall at about 100 m., and this agrees with measurements made by Mr. Powell in September.

An illustrated account is to appear in *La Montagne*.

COL DE LA CROIX DU BONHOMME.—A stone-built refuge has just been erected on this pass.

A small emergency refuge (without any furniture) to hold five or six has been erected on the ROGNON DES NANTILLONS, or Grépon breakfast-place.

THE DISGRAZIA GROUP.—Dr. Alfred Corti has just completed in vol. xli. of the *Rivista del C.A.I.* a valuable monograph of this group.

REVIEWS.

Mountain Madness. By Helen Hamilton. Collins. 8s. 6d.

THE writer of this book is fortunate to have lived to write it. She ran many needless risks and had many lucky escapes—more of both than she realises—but had she been acutely conscious of them all, it would only have added to her zest, for she revels in risks and thoroughly enjoys the thrill of starting out imbued with the idea that she has probably embarked on her last day in this world. Yet it is one of the most readable of Alpine books—well written—modest—graphic—and recalling vividly the familiar minor incidents of mountain and of hut which all climbers have experienced, but which have seldom been so well described.

It is curious that so interesting a book should be the outcome of so limited an experience, for Miss Hamilton has climbed only about a dozen peaks and seems never to have crossed a pass. Still, her climbs (all of them in the Chamonix district) include some of the very best, and the fact that she is less injured than some of us lends a freshness to her sensations and descriptions.

Miss Hamilton is evidently a born rock-climber with a good head and a fairly sure foot, and is clearly pretty capable too on ice and

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snow. But she is a fastidious climber, preferring rocks—the more difficult the better—and considering anything below Grépon level ‘overrated.’ Indeed, after ascending the Chardonnnet and the ‘overrated’ Charmoz (her first two climbs!), she goes so far as to reckon the Tour Noir ‘not worth doing,’ and also clearly not worth her excellent prose, for in the chapter devoted to its ascent she descends to ‘the blankest of blank verse.’

Our authoress’ experience of guides was far from fortunate. We do not know who they were, for all are alluded to by nicknames, but most of them treated her abominably, and all were bad guides. Even ‘Eustace,’ the best of them and the least rude, was once, at least, culpably neglectful, and was also weak enough to be goaded by her into ascending the Aig. Verte, and the Aig. d’Argentière immediately after fresh snow, ‘when rock mountains were impossible’! But in the matter of climbing on the first fine day it must be confessed that she was sorely tempted, for, in her third season—the first for which she had engaged a guide for a fixed period and had sketched an ambitious programme—the weather was hopelessly bad. She wanted to use ‘Eustace,’ and it must, in fairness, be said that he wanted to be used; and so the above strange selections were made. It is odd, though, that Argentière guides—and, for the matter of that, Chamonix guides—should be, almost to a man, unaware that the little range of the Aiguilles Rouges, which clears quickly of fresh snow, provides numberless rock-climbs—some of them well on ‘Grépon level,’—available very soon after fresh snow-falls.

Some of the most interesting passages in the book refer to experiences in huts, where, by the way, she does not sleep, but lies awake and thinks, while listening to the ‘loud sleep’ of the guides. But her sense of humour never fails her, and she even manages to extract a new joke from the classic flea. How classic and well-worn the flea is, she is probably unaware; but ‘in theory the mattresses were filled with straw: actually they contained nothing but fleas,’ strikes us as new, and as such deserves recording in this JOURNAL.

Miss Hamilton is no topographer. She can never identify the mountains she sees from a summit, and she confesses to losing her way whenever she gets a chance. But she really ought to know that Lognan is not on the ‘right bank’ of the glacier; and, considering that she has been up both the Verte and the Moine, need hardly have gone out of her way to confuse the latter with Les Droites (p. 183).

The book is illustrated with a number of photographs—many of them very good. Those depicting the talented lady herself and her costume are the least satisfactory, and might, we think, well have been omitted.

The last chapter gives a vivid description of a rather harrowing experience among Lakeland mists, after ascending the Pillar Rock by the ‘New North’ (*sic*). Here she was in no personal danger, but a friend was, and her anxiety, as indeed the whole situation, is

exceedingly well conveyed. But she has a warm heart for all in peril on the mountains, and her concern for two unknown climbers who were out all night in a snowstorm on the Dru, while she was in the shelter of the Charpoua hut, could hardly have been greater had they been her nearest and dearest.

Mountaineers will find much food for criticism in this volume; but it is written by one who admits herself a novice, and is evidently intended more for the general than the expert reader. Further, though as likely as any book we know to convey something of the lure to the uninitiated, it is not likely to tempt many into danger, for the warning is too obvious. Though she and her wretched guides were always asking for trouble, the book makes good reading, and enthusiasts will recognise a kindred spirit in the writer, for she, like them, is 'Mountain Mad.' 'Gladly would I recover me of it,' she says, 'for I hate to go uphill, to be tired and hungry; too hot; too cold. But from these discomforts how can a climber escape?'

C. W.

Mount Everest: The Reconnaissance, 1921. By Lieut.-Col. C. K. Howard-Bury, D.S.O., and other members of the Mount Everest Expedition. Arnold. 25s.

WHEN, in the middle of the last century, Switzerland became the playground of Europe and the Alpine Club started, it was obvious that, the Alps conquered, the conquerors would seek new fields of adventure. The Caucasus, the Rockies, the Andes, the Alps of New Zealand, were in turn more or less successfully attacked. The forbidding fastnesses of the Karakoram beyond Kashmir were invaded by bold spirits, amongst whom the Duke of the Abruzzi, Sir Martin Conway and Dr. Hunter Workman and his wife, brought back substantial results, while, by reaching the height of 24,600 feet, the Duke achieved a record that remained unsurpassed till this year, when 27,200 feet was attained by Captain Finch and Captain Bruce. But the highest mountain in the world, the Mother Mountain, Chomolungma, to restore to it its picturesque native name, still dwelt apart in its lofty tranquillity, 'remote, serene, and inaccessible,' protected by political barriers from all European approach. For the Mount Everest of the Indian surveyors rises on the frontier of two forbidden States, Nepal and Tibet. Nepal resolutely withstood all the blandishments of Lord Curzon when, as Viceroy, he asked leave for a party of explorers to approach the great mountain, while at a later date Lord Morley, as Secretary of State for India, firmly refused 'in the interests of the policy of H.M. Government' to present a similar request to the rulers of Lhasa.

It was not till after fifteen years' patience that the Alpine Club and the Royal Geographical Society, who had jointly interested themselves in the proposed adventure, succeeded in obtaining the ear of a sympathetic Viceroy in Lord Chelmsford. Lhasa, when appealed to, gave a prompt and cordial assent. The moment was

in every way propitious. The Poles had been gained, and both geographers and the public were ready to welcome a fresh round in the old contest between human energy and Nature, between the Spirit of Man and material obstacles. For it is obvious that the first assault on undiscovered and unmapped ranges calls for very different qualities from the climbing of Dolomite pinnacles or Chamonix aiguilles. It is no simple affair of gymnastics and muscular force; the explorers depend largely for their success on their instinct for orography, their mountain experience, and their capacity for prompt and sound judgments in critical moments.

Fortunately, in the present case, excellent human material was ready to hand. In Col. Howard-Bury was found a leader of Himalayan and Tibetan experience and unfailing tact, who combined the powers of appreciation and vivid description which constitute for us a good traveller. The members of the Indian Survey attached to the party, the naturalist Dr. Wollaston, himself an explorer hardened in Central Africa and New Guinea, the geologist Dr. Heron, all carried out successfully their respective tasks. The band of mountaineers, originally meant to number four, was sadly reduced by the death of Dr. Kellas, who succumbed to the fatigue of his previous explorations in Sikkim, and the illness of Mr. Raeburn. Its remaining members, Mr. Mallory and Mr. Bullock, though deprived of the colleagues who had local Himalayan experience, gave proof of untiring skill and energy in the arduous task that fell to them.

The instructions given to Col. Howard-Bury before starting for last year's reconnaissance were to find the best approach to Mount Everest, but not to risk an attack except under exceptionally favourable conditions. In the pages before us the reader may learn how faithfully and fully they were carried out. The story of the journey and the climbing adventure as told separately by the leader and Mr. Mallory combine to make a narrative of singular variety which sustains its interest to the end, and is agreeably supplemented by the chapters of 'Natural History Notes,' contributed by Dr. Wollaston. We have here no mere record of mountaineering, of peaks and glaciers, of perilous adventures and hairbreadth escapes. The authors make no attempt to rival the descriptions of unexampled feats associated in our memory with some previous narratives of travel in the Forbidden Land. What we find in these pages is a description of a portion of the earth's surface, hitherto unvisited and unknown to science and concerning which very erroneous ideas were current.

Tingri Dzong, a town of three hundred houses that boasted of a military governor and a garrison of a sergeant and five soldiers, was the first headquarters of the expedition. The authorities proved generally helpful and the inhabitants friendly and hospitable, bringing in supplies freely.

On the march the baggage coolies showed the usual characteristics of their race, reluctance to start early and readiness to halt when on

the road. Their method of reckoning distances was suggestive, places were said to be 'so many cups of tea apart'; three cups of tea, it was found, averaged five miles. Nor were they averse to stronger drinks; intoxicants, indeed, seem to be surprisingly procurable in Tibet. But, on the whole, they did not give much ground for complaint, and those who were trained to climb showed great pluck and endurance. There were only three cases of theft during the journey, and in one of them the culprit was a madman.

Once established at Tingri Dzong, the expedition had no difficulty in recognising the object of its quest. A straight valley, the Rhombuk, led up to the base of Mount Everest. But the party did not at once concentrate itself on its goal. All but the climbers went off to study the country to the westward. Having ascertained that the Nepalese frontier lay not on the watershed, but at the head of the great gorges to its south, they were able to cross the range by two passes below the snow level and to visit the heads of several of the southern valleys. They thus found themselves at the base of Gaurisankar, a stately peak visible from Katmandu, where the Schlagintweits picked up the name and mistakenly transferred it to the 29,000 feet summit some thirty-five miles further east. They penetrated the supremely sacred valley of Lapchikang, which boasts a temple that is an object of pilgrimage to Indian Buddhists. But during the monsoon season the weather was always against them; the snows were only seen in glimpses, and mists constantly hindered the work of the surveyors. Perhaps the hardest of all trials to a mountain explorer in distant lands he can hardly hope to revisit is to find a curtain drawn between him and the spectacle he has come so far to see. Yet Col. Howard-Bury and Dr. Wollaston found frequent consolation in the richness of the mountain flora which constantly met their eyes.

Meantime the two climbers were busily engaged in training their coolies and exploring the basin of the Rhombuk glaciers under the shadow of the great cliffs of Mount Everest. New to the eastern Himalaya, they were at first perplexed and hindered by the singular formation of portions of the glacier surface. The instreams are apt to present a labyrinth of pinnacles, cones and gulleys, a fantastic spectacle to which the Alps offer no parallel. These labyrinths are generally not impassable, but they make progress infinitely slow and laborious. They can, however, generally be avoided by means of shelves or hollows on the containing hill-sides, and this proved to be the case in the Rhombuk valley. The sources of its glaciers were found to lie in deep hollows between precipitous ridges which abutted on the great cliffs of Mount Everest itself. Minor peaks and viewpoints were visited and the watershed reached at two points, whence glimpses were gained of broken glaciers falling towards Nepal, and, looking upwards, of terribly steep, cold and forbidding corridors enclosed between the buttresses of the great mountain and leading up to its massive rock face. The climbers could see no reasonable prospect of reaching from that side the

N.E. ridge of Mount Everest, which alone seemed to offer a practicable way to the summit.

By a curious accident they were led to overlook an opening on the E. bank of the main Rongbuk glacier, which was subsequently examined by the surveyors and proved to conceal an ice-stream offering access to the point they wished to gain—the foot of the N.E. ridge. The desired spot was ultimately gained from the opposite direction, and it is difficult for the reader to regret the oversight, since but for it he would have lost the most attractive chapters of the book.

Despairing of any success from the N., the base of the expedition was transferred from the eastern flanks of the mountain to the Kharta and Kama valleys, steep glens that fall abruptly to the Arun river and the great gap that separates Makalu from Kanchenjunga and allows a passage to the life-giving moisture of the monsoon. The change of scene was magical. The monotonous landscape of the Rongbuk, redeemed only by the snows at its head, was exchanged for scenery that can hardly be equalled elsewhere, unless in the heart of Sikkim. Exquisite foregrounds of forests and flowers, of blue lakes and tumbling torrents, framed the superb precipices of Makalu—a far more striking mountain than Mount Everest and its attendant bevy of gigantic towers and icy crests. We read of groves of junipers, silver fir, mountain ash, willow birch, and thickets of rhododendrons, of open glades carpeted with flowers—gentians of three different kinds, delphiniums, saxifrages, edelweiss, asters, blue poppies, and the various *Saussurea Gossypina* packed up in what looks like a bale of wool. Excursions were made from the Mama valley, the pearl of the region, to a gap in the crest connecting Makalu and Mount Everest, commanding a wide prospect towards Nepal, and a high pass was forced to the Kharta glacier. But these varied delights and discoveries were beside the main object, the finding of a way to the base of the N.E. crest, which in views, equally from far and near, suggests itself to the trained eye as the last lap in the climbers' progress. Fortunately, the missing key was at last found. When the pioneers attained a ridge of 22,350 feet at the head of the Kharta valley they saw before them a snowy basin, and at its further side a gap at the base of a buttress of the desirable crest. This basin was the source of the hidden glacier of the Rongbuk valley. Of how on a later day the climbing party descended 1200 feet on to the basin, camped under the gap, mastered the steep slope leading to it, and then at a height of 23,000 feet, with no serious obstacles in sight before them, were stopped by insupportable winds, Mr. Mallory must be left to tell the tale. It could not be told better than in his simple and vivid words.

The reconnaissance of 1921 fully accomplished its task. It found a means of approach to the final ridge of Mount Everest and ascertained that it was of a character which, at any lower elevation, would certainly be held practicable. The expedition of this year, if it has failed in its principal object, has secured a great step towards future success. It has established that—contrary to the opinion of

many experts—the object is probably attainable. It has done this by showing that a bivouac can be established at over 26,000 feet, and that climbers, even without the aid of oxygen, have not necessarily reached at 26,800 feet the limit of their powers. It has further furnished valuable experience as to the best method of utilising oxygen. We have gained good ground for believing that another party, as strong and as fully equipped and provisioned, but favoured by calm and fine weather—which was not the case in 1922—may hope to conquer the remaining 2000 feet. The odds against complete success in any particular attempt may be heavy, but they are worth facing. Some day the party whom fortune favours will certainly succeed.

The Conquest of the New Zealand Alps. By Samuel Turner. T. Fisher Unwin. 21s.

THERE are two things which strike one in reading this book; the first is what a fine record the author has in climbs, which include nearly all the most difficult peaks in the Tasman District—one admires his enthusiasm and extraordinary energy. The second noticeable point, however, discounts the first—namely, the deliberate manner in which he goes out of his way to recount the shortcomings of his companions. Every mistake made by any of his parties other than himself is faithfully recorded, and to those who know the facts, many of these shortcomings exist only in the author's imagination. From the general tone of his remarks one cannot escape from the impression that the author is trying to increase his own 'kudos' at the expense of his companions.

He need not have adopted this method, as his exploits require no 'boosting'; they are good enough to stand on their own merit, but that fact is lost sight of in the irritation roused in the mind of the reader.

Mr. Turner makes another serious and, if I may say so, a very curious mistake—he seems to think it necessary to support his record of ascents by 'witnesses' and certificates, notably in his solitary ascent of Mount Cook, in which case he publishes this certificate in full.

To anyone who knows N.Z. Alpine history, this certificate is valueless, because it is only 'splitting straws' to say the party who ascended Cook in '94 were not amateurs (we had no paid guides in the accepted sense in those days); and secondly, N.Z. climbers have always accepted Zurbriggen's ascent alone in 1895. Mr. Turner throws doubt on this record. Why? I can only assume it is set aside by him because he wants the honour. I know of no authority for his saying that N.Z. climbers doubt Zurbriggen's ascent. Personally I saw him start; I made on that day the first crossing of the Copland Pass, and the weather and snow conditions were absolutely perfect; besides, we have Adamson's statement that he saw him on the summit. The claim is accepted by the N.Z.A.C., see 'N.Z.A.J.' vol. ii. p. 37.

Mr. Turner is hardly fair in his comment on our guides. Up to

'95 we were all learning the work; some of the pioneers took to professional guide work. Their ranks were gradually increased, but Peter Graham, the chief guide, never let a beginner lead on difficult peaks. The reference in the first chapter to Darby Thomson as a 'porter' is amusing, for Darby was one of the best guides we ever had—however, the author is very genuine in his praise of Thomson's qualifications, but we know that in the incident on p. 20 on Elie de Beaumont the suggestion of cutting the rope was not Thomson's—he scorned the suggestion when made. This must be placed on record in honour of the man who lies buried in the Linda glacier, where he was overwhelmed with S. L. King, A.C., in 1914.

One more point is the curious kink in Mr. Turner's mind that efforts were made to forestall him in his contemplated climbs. This is noticeable on p. 47 in connection with Miss du Faur and on p. 184 by Messrs. Chambers and Wright (since members of the A.C.). The suggestion is childish.

Some writers are apt to overlook older records of early pioneer work. Mr. Turner goes rather further, and in some cases seems to belittle that work in order to enhance his own. In his preface he uses the expression 'the N.Z. pioneers of the last ten years.' It may be a coincidence, but one cannot help noticing that it is ten years since he began his serious work in the Southern Alps. The real pioneer work in this district ended in 1895 and peak climbing began seriously—in country explored and mapped by the man who went before. This 'spade work' is too often overlooked by the men who have followed in the steps 'broken' by their predecessors, who did the less showy, but possibly the more valuable work.

The author's work round Tutoko in the south was undoubtedly good, and was more in the nature of pioneer work—though here he was preceded by Malcolm Ross, A.C., and Mr. Graves of Samaru, who has spent years of exploration in that most difficult country, and who is so modest about it that we cannot persuade him even to write us a paper for the 'N.Z.A.J.' Of Mr. Graves's work no mention is made, and Mr. Ross's work is adversely and hardly fairly criticised.

One or two minor errors almost escape notice; for instance, on p. 140 he mentions 'limestone rock' overlooking the Tasman glacier—there is no limestone in the district. Names are misspelt wholesale, notably Lyttleton for Lyttelton, p. 266; Tucker's col for Tuckett's col, p. 117; cleddan for cleddau on pp. 215 and 244; Denouston, p. 7, Denniston, Chap. III. (both wrong), and others.

I must not be held to endorse all Mr. Turner's mountain methods or practice, but to sum up, it may be said, and said with sincere regret, that an exceptionally fine record of climbs by an exceptionally strong climber, whose boundless enthusiasm and energy has carried him over many difficulties, has been marred by the serious defects which disfigure the narrative.

It is a pity.

Wellington, 8—8—22.

A. R. H.

Les Alpes de Savoie, vol. 3. *Les Massifs entre la Savoie et le Dauphiné*. Par le Commandant Emile Gaillard, M.C. 22 fr.

THIS volume follows the plan of the two previous volumes, 'Les Massifs entre l'Arc et l'Isère' and 'La frontière franco-italienne entre la Seigne et le Thabor,' and contains minute itineraries of over 400 cols and summits as well as 13 outline maps. The country described is seldom visited by English climbers except the Massif des Arves, which is treated very fully with a special map (1 : 25,000), indicating the many routes which have been made up the Aiguilles,¹ so familiar to us from Whymper's Scrambles. The author mentions a little known route up the S. Aiguille. This does not touch the famous Mauvais pas, but leads past its foot until the ledge snuffs out in the face, when a direct line for the summit, at first up a broad steep chimney with rotten holds and then right up the slabby E. face bearing always to the right, is taken. There are quite big potholes in the slabs as though pudding stones had broken out, which give safe resting-places from time to time. This route was first taken, in ignorance of the position of the Mauvais pas, by Klucker on July 13, 1893, thus anticipating the ascents quoted in the present volume. The times were, Col Lombard, 6.25 ; Brèche, 7.25 ; main arête, 8.20 ; summit, 8.26. It is well worth repeating.

The present volume is a bit of very sound work. The Commandant is now engaged on the Dauphiné volumes, to which we look forward with interest.

The Call of the Mountains : Rambles among the Mountains and Canyons of the United States and Canada. By Le Roy Jeffers, A.C., F.R.G.S., etc. (New York : Dodd, Mead & Co. 1922.)

IN the 'Call of the Mountains' Mr. Le Roy Jeffers has produced a book that is not only eminently readable, but also one that should be of considerable use to those who think of visiting the mountain districts of North America. He describes briefly how, with an ice-axe and a sleeping-bag, he has climbed and explored all the more important mountain regions in the United States and Canada. He also has illustrated the book with a series of excellent and well-chosen photographs ; this he was able to do, being the Secretary of the Bureau of Associated Mountaineering Clubs of North America, and Librarian of the American Alpine Club, etc.

Many of his ascents were first ascents, in which he encountered the difficulties, and sometimes the disappointments, that are usually met with by those who do the pioneering work amongst unclimbed peaks.

The districts visited range from California to the Canadian Rockies, and from the Oregon coast to Maine on the Atlantic.

¹ Col. R. Godefroy, our Hon. Member, who has made seven ascents of the Aiguille Centrale, is now engaged on a monograph of the group.

To mention some of them : the Canadian Rockies, Mt. Rainier, the Yellowstone, and the Teton range, California, the Grand Canyon of the Colorado, the Yosemite, the mountains in Maine, and others. Many of these districts have become national parks, and are easier of access than some of the other places mentioned.

In the book are many descriptions of the mountaineering exploits of the author, his ascent of Mt. Moran in the Teton range being one of the most interesting. Four years ago, in the *Scientific American*, it was reported that 'the summit of Mount Moran has never been attained, and probably never will be,' yet Mr. Le Roy Jeffers has since then, in August this year, ascended to its summit. In mountaineering it is never safe to say that any peak is inaccessible.

There are several chapters in the book that are not concerned with mountaineering. One of them, of particular interest, is on the prehistoric cliff dwellings in the Mesa Verde National Park in the south-western corner of Colorado. These remains were only discovered in 1888. Who the people were that built them remains a mystery, as nowhere else in the United States are there any remains in the least like them. There is also a chapter on the Pacific coast of Oregon, as well as chapters on the Californian desert, the Mammoth Cave of Kentucky, winter sports among the mountains, and one that deals with the Massachusetts Atlantic coast.

The author has a keen appreciation of the natural beauties of those western wonderlands, of the mighty woods, the valleys, the waterfalls, the mountain lakes, the flowers, and the animal life.

The book is well printed and well illustrated, and gives one an excellent idea of all the very different kinds of mountains and of scenery that can be visited in the United States and Canada.

Jahrbuch des Schweiz. Ski-Verbandes. 1922.

THE editor, Mr. O. Gurtner, is well known as a summer and winter mountaineer, mainly interested in the development of ski-ing as an adjunct to mountaineering.

The first article, 'Alpinismus und Skilauf,' by Dr. O. Hug, member of the A.A.C., Bern, is an interesting review of the rise of mountaineering. He puts its birthday as 1786, its youth as extending to 1857. The influence that English climbers have had on the development of mountaineering is stated with critical fairness, but few of us will agree with Dr. Hug's expectation that with the conquest of Mt. Everest our enthusiasm for mountaineering will wane in the absence of even more attractive objects of attack. In any case the objects are not likely to fail !

Mr. Marcel Kurz is responsible for a detailed summary of the winter ascents of the main Pennine summits, of which he himself has ascended about twenty ('A.J.' xxxiv. 133 *seq.*).

Three interesting air photographs are included.

The Canadian Alpine Journal: 1921 and 1922. Vol. xii. Published by the Alpine Club of Canada.

THE tragedy of Mount Eon is the most serious disaster which has befallen the Alpine Club of Canada since its foundation, and it was inevitable that it should cast a deep shadow over the present volume of the Journal. The whole sad story is told, authoritatively and finally, by Mr. A. H. MacCarthy, and the only comment that need be made on his arresting paper is that it hardly does full justice to the dangers and hardships which were faced by the two search-parties. An impressive 'In Memoriam' notice of Dr. Stone is supplied by the same competent hand, and the record is completed by an account of the attempt on Mount Eon in 1920, and by Dr. Stone's last climbing paper, describing an ascent of Mount Uto with his wife.

In the remainder of the volume the predominant element is climbing pure and simple. Six or seven actual first ascents are recorded, besides several other new climbs and new routes. In the case of two expeditions—the first ascent of Mount Sturdee and the Terrapin-Magog traverse (the latter a brilliant invention of Mr. MacCarthy's)—the second party give their experiences as well as the first, an excellent plan when space permits of its being followed. These climbs, as well as that on 'Mount Edmonton,' belong to the story of the Assiniboine camp, which is well described from a visitor's point of view by Mr. J. A. Osler. Mount Fifi, a neighbour of Mounts Louis and Edith, and the Second Sister of Canmore add two more to the list of rock-climbs near the railway in the Banff district. Mr. Fynn sends notes of a new route on Mount Lefroy and the second ascent of Mount Quadra, both near Lake Louise, and an ascent (the third ?) of Mount Freshfield. Mr. Monroe Thorington describes the Asulkan-Abbot traverse, a 'Grat-wanderung' of formidable length, and Mr. Hickson a sensational ascent (the second) of that fine peak, Mount Forbes.

All these expeditions are in fairly well-known country; in the way of exploratory mountaineering the most active contributor is Mr. Carpe, who sends notes of an attempt on Mount King Edward (near Mount Columbia) and first ascents of Mount Serenity (near Fortress Lake) and an unnamed peak in a remote part of the Selkirks. A valuable paper by Mr. Hall, which would have been yet more valuable if accompanied by a map, describes a visit to the British Military Group and the first ascent of Mount French. This conquest may be regarded as the first-fruits of Mr. Wheeler's series of Walking Tour camps; interest in this region has since then been increased by the holding of a Club camp at Palliser Pass, and no doubt we shall hear a good deal more of it in the near future.

The scientific section contains two important papers which are due to the Alberta-British Columbia Boundary Commission, a discussion of the characteristics of Passes in the Canadian Rockies by Mr. Wheeler's colleague on the Commission, and a synopsis of Mr. Wheeler's own Report on the Location of Mount Brown and Mount Hooker. His conclusions have been accepted by the

Geographical Board at Ottawa, and the peak selected by him as the most likely candidate for the position of Douglas's Mount Hooker will bear that name in future. It faces Mount Brown, on the opposite side of the Athabasca pass, and is unquestionably the most suitable peak that could have been chosen.

The remaining papers include a charming and stimulating account of a successful nine days' trip through the mountains made by Mr. and Mrs. Sibbald, without pack-horses or other assistance except that afforded by a cache of some food made shortly before their start, a belated article on Mount Everest, and some pleasant reminiscences of early days by Professor Fay.

Deux Peintres Suisses—les Lory, 1763–1846. Par Conrad de Mandach. Berne. It has been my good fortune to have Dr. Conrad de Mandach's (Director of the Musée des Beaux-Arts de Berne) book, 'Les Lory,' brought to my notice. The book is a very important addition to our knowledge of these two great Swiss artists and engravers and their works, and reflects great credit on the author for his industry and research into the history of a very interesting period of Swiss art. Sufficient attention to this phase of Swiss life is lacking in this country, but in Switzerland there has been for many years past a constantly increasing appreciation of the works of Swiss artists and engravers between the years 1770 and 1830. Among these the two Lorys, father and son, have a high place. The work of the son, as a study of his drawings and engravings shows, is superior to that of his father, he having had many advantages in early life which his father lacked. The two men rank with those other great masters of Swiss art of their time, Freudenberger, Aberli, and König.

The delightful picture given us by Dr. de Mandach by means of the letters from M. Maximilien de Meuron to his sister, Mlle. Julie de Meuron, describing the journey of Lory fils, Meuron and Bertram de Ratesbonne into Italy by the Simplon road just completed by Napoleon (which resulted in the publication of 'Voyage pittoresque de Genève à Milan par le Simplon'), is by no means the least interesting part of the book.

The costume subjects of both father and son, of which numerous illustrations are shown, are much sought after on account of their faithful portrait of the people of their day and their excellent artistic qualities.

Dr. de Mandach's book is very comprehensive and exceedingly well written. The printing and the reproductions from some of the most artistic pictures and prints of the artists are excellent, and the list of engraved works at the end of the book is most valuable to the student and collector.

Every lover of Swiss art should have a copy on his shelves.

The writer recently had the pleasure of meeting Dr. de Mandach at the Art Gallery at Berne, and of seeing a number of Lory prints and drawings in the very interesting collection, from which material much of the book is drawn, and can recommend a visit to the gallery, where one is most courteously received.

R. W. L.

CORRESPONDENCE.

THE LATE LORD WENTWORTH.

DEAR CAPT. FARRAR,—While reading your paper on Lauener's 'Führerbuch' ('A.J.' vol. xxx.), and 'The Alpine Career of the Earl of Lovelace' ('A.J.' vol. xxxiii.), I remembered some old letters given me by the Lauener family. . . . For the Lauterbrunnen guides (the older generations) Lord Wentworth is still 'the Lord.' He must have been a keen mountaineer, and one of the best 'Herren' of the Laueners.

Yours faithfully,

O. GURTNER.

Lauterbrunnen, June 29, 1922.

[The letters which Mr. Gurtner, the well-known authority on the Oberland, is good enough to send are from Lord Wentworth to Ulrich Lauener *re* future engagements. The account (reproduced) is interesting as showing the rate of pay of those days, viz. 79 fr. per week.]

(IV.) Rechnung für Herrn Lord			
für das Jahr 1876			
Soll	1de Juni angefangen bis Ende October		
	per Woche fr. 100	fr. 2000	
Haben	Herrn Lord zahlte mir bis 1ten August .	800	
		<hr/>	
	Lord Soll	fr. 1200	
Ich zahlte an meinen Bruder Christian		fr. 240	
Für Rückreise von Genf		fr. 25.30	
„ Koffer nach Martinach		fr. 2.80	
Ein Paar Strümpfe		fr. 5	
		<hr/>	
		fr. 1473.10	
Herrn Lord zahlte mir als Reisevorschutz .		fr. 1000	
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Bleibt Summa .		473.10	
Ulrich Lauener Trüpfli.			

THE SURVEYS OF MR. W. H. JOHNSON IN THE K'UN-LUN
IN 1865.

To the Editors of the ALPINE JOURNAL.

DEAR SIRs,—In continuation of my note and that of Sir Aurel Stein regarding Johnson's supposed ascent of E 61 (23,490 ft.) on the K'un-lun range S. of Khotan, you may consider the following worthy of record in the JOURNAL.

When at Calcutta recently, Lt.-Col. H. Wood, R.E., made an

extensive search among the old records stored there. He found two of Johnson's plane-table records dated 1865. He brought these up to me for examination. One is on the scale of 4 miles to an inch of the Lingzi-thang plains, up to the range including E 57 and E 58; the other, on 8 miles to an inch, shows Johnson's representation of the country N. of the range.

In both these plane-tables E 61 is plotted correctly. But with the desire for accuracy that was characteristic of him, the second bears a note in Col. Walker's own handwriting to the effect that 'this is not Johnson's original plane-table.' The date of this remark is 1884, and it is initialled J. T. W. I think it must be assumed that the original is destroyed. Calcutta, Simla, and Dehra Dun have all been searched. Though the other plane-table does not carry the same remark, I think it may be assumed that this, too, was a recompilation from the original. There is no doubt that the synopsis of points given to the surveyors in that year gave a wrong position to E 61. Col. Sir Sidney Burrard has sent me a letter from Col. Godwin Austen, in which the latter says, 'The season Johnson went to Khotan, my work was in the Changchenmo and from Pangkong to Rudok. I projected the points on my plane-table in the office at Dehra from that same synopsis. E 57, E 58, and E 61 were on the very northern edge of my board, and I tested them from trigonometrical stations. One was quite out, I remember.'

Sir Aurel Stein and I examined these two plane-table compilations very carefully. The topography of the range and the Lingzi-thang to its S. is as shown in the map prefixed to Johnson's report in 'J.R.G.S.' vol. xxxvii. E 61 is correctly plotted, but the range containing E 58 and E 59 has been stretched to include it. Red circles are shown on the summits of all three, and a note below indicates that this symbol marks points where Johnson set up his plane-table.

The most interesting information that has come to light, however, is that the route to the supposed E 61 is shown by a fine broken line. Sir Aurel was right in saying that Johnson could not have reached Zokputaran from Haji-langar in the time available. Johnson's map shows his journey to the supposed E 61 as leaving his route from his camp below the 'Katai-diwān.' I have worked out his marches from this point to Zokputaran, and Sir Aurel agrees that from here it would be just possible for him to reach and climb the peak within the time. Stein also recognises a general agreement in the features of the ground covered by these marches with that surveyed by him in 1908 to the E. and S.E. of the 'Katai-diwān.' It is curious that Johnson's published itinerary makes no reference to this diversion from his route, but as there is no pass over the range in the neighbourhood of Zokputaran, as far as we know, he may have thought it unnecessary to report this journey in detail.

The plane-table N. of Yangi-dawān shows how hopelessly out

a survey can be thrown by faulty or insufficient points. Johnson, in both 1864 and in 1865, seems to have been obsessed with the idea that he must cover as much ground and map, however roughly, as great an area as possible. His fixed points and his visited stations were far too few for the vast stretches of ground, most of it very difficult, mapped by him.

Sir Aurel has kindly glanced through and approved these notes.

Believe me,

Yours sincerely,

Kashmir, May 12, 1922.

KENNETH MASON.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, May 2, 1922, at 8.30 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The following candidates were balloted for and elected Members of the Club, namely, Mr. Howard Palmer and Mr. John Duke Smith.

The PRESIDENT said: With great regret I have to announce the death of an old Member of the Club, Mr. C. Comyns-Tucker. He was elected to the Club in 1866, and served on the Committee in 1875. He was also Librarian for some years. He climbed with Dr. D. W. Freshfield in the Alps in 1866 and 1867, and accompanied him on his first expedition to the Caucasus in 1868. After that he climbed often with Dr. Freshfield and the late Mr. T. H. Carson. He made many first ascents in the Grisons and in the Dolomites. He was a Fellow of University College, Oxford, a barrister, and a country gentleman. (An Obituary Notice is published in this number of the Journal.)

Professor W. P. KER then read a Paper entitled 'Abbot Nicholas in the Alps, A.D. 1154,' and showed some lantern slides which were afterwards supplemented by others shown by the President, in order to illustrate the derivation from the Norwegian of various place names in the Orkney Islands, the North of Scotland, Skye, and as far south as Yorkshire.

A discussion followed, in which Dr. D. W. Freshfield and Sir Martin Conway took part, and the proceedings closed with a hearty vote of thanks to Professor W. P. Ker.

A GENERAL MEETING of the Club was held in the Hall, 23 Savile Row, London, W. 1, on Tuesday, June 6, 1922, at 8.30 P.M., Professor J. Norman Collie, LL.D., F.R.S., *President*, in the Chair.

The PRESIDENT said: I regret to have to announce the death of the Rev. Francis J. Tuck, which took place in July, 1921. He was elected in 1882, and in his younger days was a very keen sportsman.

I have also to announce that an invitation to the Members of this Club to attend the Summer Camp of the Alpine Club of Canada

at Palliser Pass from July 29 to August 12 has been received from Mr. Arthur C. Wheeler, and I am sure that any Member who accepts this invitation will be sure of a very hearty welcome.

The Regulations with regard to the Annual Winter Dinner were approved.

An invitation to join the Advisory Council of British Mountaineering Clubs was brought before the Meeting for consideration. A general outline of the objects of the Advisory Council was given by Mr. Godfrey A. Solly, Vice-President, who moved that the invitation be accepted. The motion was seconded by Mr. G. W. Young and carried *nem. con.*

The Rev. Canon G. M. BELL then read a Paper entitled 'An Adventure on the Dent Blanche,' which was illustrated by lantern slides. The President and Mr. H. Symons took part in the discussion which followed. A hearty vote of thanks to the reader was carried with acclamation.

ADDENDA AND CORRIGENDA.

Vol. xxxiv. p. 104. The statement regarding 'High Inland Ice' in Eastern Spitsbergen should be understood to apply to the particular region crossed by the party in question, and to confirm Sir Martin Conway's observations for the area in general in his 'With Ski and Sledge across Arctic Glaciers.'—N. E. ODELL.

P. 172, line 13 from bottom, *read* 'July 26.'

P. 235, line 1, *for* 'arm' *read* 'CWM.'

P. 328. Mr. A. Versluys' ascent of the Viereselsgrat was made from *Mountet*. His time on the Z'Mutt-Matterhorn was 6½ hours.

P. 340, line 18, *read* 'Saas.'

END OF VOLUME XXXIV.

The Index will be issued with the next number.

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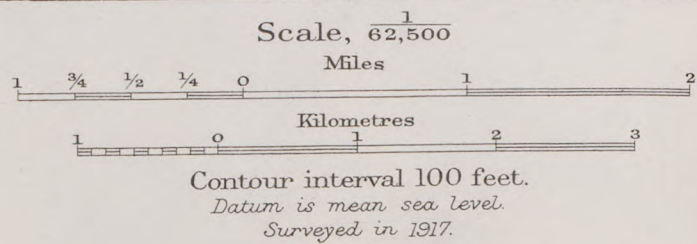
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